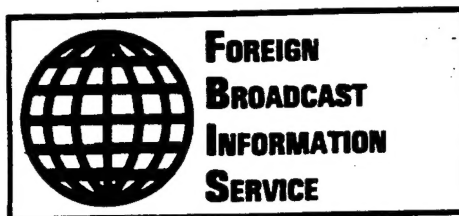
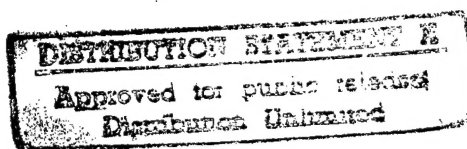


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JPRS Report



Environmental Issues

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Environmental Issues

JPRS-TEN-92-010

CONTENTS

4 June 1992

INTERNATIONAL

Convention on Baltic Sea Environmental Protection Signed [Moscow IZVESTIYA 14 Apr]	1
Caspian Sea States Urged To Establish Cooperation Council [Tehran IRNA 15 Apr]	1
Eminent Persons' Forum Considers Global Clean-Up Costs	2
Carter, Strong, Miyazawa Address Meeting [Tokyo KYODO 15 Apr]	2
Text of Declaration on Financing Global Environment [Tokyo KYODO 17 Apr]	2
First World Congress on Tourism, Environment Held in Belize [Bridgetown CANA 29 Apr]	4

AFRICA

REGIONAL AFFAIRS

SACIM Countries Plan To Sell Ivory, Elephant Products [Johannesburg SAPA 16 Apr]	5
--	---

SOUTH AFRICA

Security Implications of Expanded Game Park Viewed [AFRICA CONFIDENTIAL 21 Feb]	5
Lions Reintroduced Into Natal Game Park [WEEKEND ARGUS 22 Feb]	8
Apartheid Era Linked to Environmental Damage [THE ARGUS 5 Mar]	9
Population Growth Termed Greatest Threat to Environment [THE ARGUS 5 Mar]	10
Policy Changes in Cetacean Capture Announced [THE ARGUS 12 Mar]	10
Debate Continues on Elephant Hunting [THE WEEKLY MAIL 13-19 Mar]	10
Poachers Decimating Rhinos in North [Johannesburg Radio 27 Apr]	13
New Process for Treating Industrial Effluent Patented [Johannesburg Radio 3 May]	13
Scientist Welcomes ANC's Environmental Proposals [BUSINESS DAY 5 May]	13

ZAMBIA

Pollution Control Act Implemented [TIMES OF ZAMBIA 8 Mar]	14
---	----

CHINA

Academy of Sciences Evaluates Impact of Three Gorges Project [ZHONGGUO KEXUE BAO 13 Mar]	15
Song Jian Urges Further Development of Environmental Sector [XINHUA 21 Apr]	16
Council on International Environmental Cooperation Set Up	17
Symbol of Government's Expanding International Role [XINHUA 21 Apr]	17
Members Present 5-Point Plan for Environment, Development [XINHUA 23 Apr]	17
Environmental Monitoring Center To Be Established in Tibet [XINHUA 30 Apr]	18
Scientists Predict Yellow River Disaster in 'Next Decade' [CHINA DAILY 30 Apr]	18

EAST ASIA

REGIONAL AFFAIRS

Asian NGO Forum Vows To Establish 'Global Citizens' Network' [Tokyo KYODO 3 May]	19
Singapore, Indonesia Agree on Joint Waste, Hazardous Substances Control [Singapore THE STRAITS TIMES 22 Apr]	19
Beijing Agrees 'In Principle' to Nuclear Dumping by Taiwan [Hong Kong THE STANDARD 15 Apr]	19

JAPAN

White Paper Calls for Conservation of Rain Forests [KYODO 14 Apr]	20
---	----

MITI Official Reacts Negatively to Environmental Tax [KYODO 17 Apr]	20
Tokyo Declaration on Environment Receives Mixed Welcome [KYODO 17 Apr]	20
Environment Committee Calls for End to Mass Consumption [KYODO 24 Apr]	21
Nissan To Eliminate CFCs in Manufacturing Process [KYODO 27 Apr]	21
Feasibility Study on Asia-Pacific Gas Pipeline Initiated [KYODO 1 May]	21

SOUTH KOREA

Minister Proposes New Environment Office [YONHAP 29 Apr]	22
--	----

LAOS

Wild Elephants Slaughtered in Nakai Plateau Area [KPL 28 Apr]	22
Decree Suspends Timber Exports From All Provinces [Vientiane Radio 30 Apr]	22

MALAYSIA

Mahathir Proposes Earth Greening Targets [BERNAMA 27 Apr]	23
Mahathir Urges Acceptance of Tropical Timber Competition [BERNAMA 27 Apr]	23

THAILAND

Ban on Sale of Leaded Gas Endorsed [BANGKOK POST 7 Mar]	23
---	----

VIETNAM

Directive Bans Special-Purpose Forest Exploitation [Hanoi Radio 24 Apr]	24
---	----

EAST EUROPE

REGIONAL AFFAIRS

Experts Agree on Monitoring of Atmosphere in Black Triangle [Prague Radio 13 Apr]	25
---	----

ALBANIA

Elbasan Industrial Pollution Examined [ZERI I RINISE 8 Apr]	25
---	----

BULGARIA

Zhelev Signs UN Pledge To Protect Planet Earth [DEMOKRATSIYA 23 Apr]	26
--	----

CZECHOSLOVAKIA

Slovak Government Approves Nuclear Plant Reconstruction [CSTK 23 Apr]	26
---	----

HUNGARY

Government Plans To Reduce Carbon Dioxide Emissions [MTI 21 Apr]	26
--	----

ROMANIA

Environment Minister To Run for President [ROMPRESS 21 Apr]	27
President Iliescu Reviews Black Sea Cooperation Efforts [ROMPRESS 21 Apr]	27
Ecological Movement Holds Congress; Moldovans Attend [ROMPRESS 3 May]	27

YUGOSLAVIA

Safety of Krsko Nuclear Power Plant Questioned [Zagreb Radio 24 Apr]	28
--	----

LATIN AMERICA

ARGENTINA

Newly Released Forestry Plan Calls for 'Intensive' Efforts [CLARIN 22 Mar] 29

CHILE

Economy Minister Warns OAS Meeting on 'Bad Use' of Environmental Issue
[Madrid EFE 21 Apr] 30
Aylwin Opens FAO Environmental Policies Forum [Santiago Radio 28 Apr] 30

COLOMBIA

Riverine Pollution From Detergents Assessed [EL TIEMPO 15 Mar] 31
Health Minister Reports on Over Use of Pesticides [Bogota TV 21 Apr] 32

GUATEMALA

Rerouted Achiguate River Ruinous to Farmers [PRENSA LIBRE 9 Mar] 33
ASIES Says Potable Water To Disappear by 2010 [PRENSA LIBRE 9 Mar] 33

PANAMA

Legislative Assembly Creates Commission on Environment [EL PANAMA AMERICA 20 Apr] 34

VENEZUELA

Study Reveals Decline in Use of Ozone-Depleting Substances [EL UNIVERSAL 9 Mar] 34
Rise in Incidence of Environment-Related Diseases Noted [EL UNIVERSAL 10 Mar] 35
Lake Valencia Cleanup Program Planned [EL DIARIO DE CARACAS 7 Apr] 35

NEAR EAST/SOUTH ASIA

REGIONAL AFFAIRS

Experts Examine Arab World Water Resource Prospects [Paris AL-WATAN AL-'ARABI 7 Feb] ... 38
Arab Officials Meet To Coordinate Environmental Plans [Cairo MENA 4 May] 41

BANGLADESH

FAO Conference Views Regional Strategies on Land Degradation
[THE BANGLADESH OBSERVER 14 Feb] 41

EGYPT

UN Ozone Fund Provides Egypt \$1.5 Million [AL-AHRAM AL-DUWALI 1 Mar] 42

IRAN

Deputy Energy Minister on Urban Water Problems [SALAM 23 Feb] 42

IRAQ

Oil Minister on Environment, Vienna Meeting [INA 20 Apr] 43

ISRAEL

Fund Allocation Allows Israel To Join Ozone Convention [Jerusalem Radio 29 Apr] 44

PAKISTAN

National Conservation Strategy Approved [THE PAKISTAN TIMES 2 Mar] 44
UN Report Calls Nation 'Polluters Paradise' [DAWN 6 Mar] 44

Pollution of Coastal Area Waters Deployed [DAWN 7 Mar]	46
Karachi Nucler Plant Can Continue To Work Until 2012 [THE FRONTIER POST 25 Apr]	46

CENTRAL EURASIA

Ecological Conference of CIS, Baltic States Ends [ITAR-TASS 23 Apr]	47
Ecology Minister Previews Rio Conference [ZELENYI MIR No 13-14, Apr]	47
Russia's Efforts on Ozone Problem in Budgetary 'Hole' [ROSSIYSKAYA GAZETA 18 Apr]	50
Process of Preparing Russia's New Environmental Law Described [SPASENIYE No 8, Mar]	50
Vorontsov Campaigns for Nuclear Moratorium [KOMSOMOLSKAYA PRAVDA 8 Apr]	51
Rostov Group Works To Prevent Startup of Nuclear Station [Radio Rossii 12 Apr]	52
First Joint Conference of Nuclear Power Plants, Local Authorities Held [Radio Rossii 25 Apr]	53
Russia's Ecological Coordinating Council Holds First Session [SPASENIYE 8 Mar]	53
New Ecological Journal Published [ROSSIYSKAYA GAZETA 19 Mar]	54
Moscow Pollution Monitoring Station in Jeopardy [Ostankino TV 11 Apr]	54
St Petersburg Not Able To Cope With Pollution Control Standards [RADIKAL No 10, Mar]	54
St Petersburg Area Termed 'Radiation Cesspool' [KOMSOMOLSKAYA PRAVDA 7 Apr]	56
Ust-Kamenogorsk Ecological Problems Explored [KAZAKHSTANSKAYA PRAVDA 28 Jan]	57
Former Military Plant To Produce Catalytic Converters [MOSKOVSKAYA PRAVDA 14 Mar]	59
Krasnoyarsk Plutonium Production To Cease [IZVESTIYA 18 Apr]	60
Current Conditions at Sverdlovsk Anthrax Site Examined [POISK 7-13 Mar]	60
Vozrozhdeniye Island Biological Weapons Activities Still 'Secret'	
[DELOVOY MIR No 61, 28 Mar]	62
Further Revelations on WWII Chemical Dumping in Baltic [OGONEK No 8, 8 Feb]	64
Alternatives for Dealing With Chemical Weapons in Baltic Examined	
[RABOCHAYA TRIBUNA 10 Apr]	67
Russia Cannot Afford To Raise Sunken Submarine [KOMSOMOLSKAYA PRAVDA 14 Apr]	68
High Radiation Levels Found on Kola Peninsula [Ostankino TV 28 Apr]	69
Ecologists Measure Pollution From Novaya Zemlya Nuclear Tests [Ostankino TV 1 May]	69
Russia Seeks To Restart 'Simulator' Reactors in Estonian Port City [Ostankino TV 1 May]	69
Deputies Warn Against 'Arctic Chernobyl' [ITAR-TASS 21 Apr]	70
Russian, U.S. Scientists To Cooperate on Pacific North Studies [ITAR-TASS 21 Apr]	70
Shcherbak on Problems Facing Ukraine's Environment Ministry [GOLOS UKRAINY 28 Feb]	70
Conference Views Problems of Yavorivskiy Military Test Site	
[Lvov ZA VILNU UKRAYINU 2 Apr]	71
Commission Formed To Monitor Ecological State of Dnieper [Kiev Radio 15 Apr]	71
Shcherbak Assesses State of Ecology in Ukraine [MOLOD UKRAYINY 17 Apr]	71
Scientist Reviews Prospects on Chernobyl Situation [Kiev Radio 21 Apr]	72
Health Minister Quotes Statistics on Chernobyl-Related Diseases [Kiev Radio 22 Apr]	73
Ukraine Drafts Longterm Program on Chernobyl Consequences [Kiev Radio 22 Apr]	73
Ukraine's Chernobyl's Death Toll Over 6,000 [ITAR-TASS 22 Apr]	73
Chernobyl Report Doubles Byelarus Damage Estimate [ITAR-TASS 14 Apr]	74
'Massive' Increase in Thyroid Cancer Expected in Byelarus [IZVESTIYA 16 Apr]	74
Byelarus Supreme Soviet Adopts Environment Law [Moscow Radio 24 Apr]	74
Moldovan Minister Wants Full Membership in Black Sea Conference	
[Bucharest ROMPRES 22 Apr]	74
Environment Minister on Dilemma of Restarting Armenia's AES [EPOKHA 20 Feb]	75
Caspian-Aral Canal Project Planned [TRUD 2 Apr]	76
Scientists Warn Black, Azov Seas May Suffer Same Fate as Aral Sea [ITAR-TASS 3 May]	76
Kazakhstan Takes Steps To Aid Aral Region Population	
[KAZAKHSTANSKAYA PRAVDA 5 Feb]	77
Kazakh Administration for Protection of Fish Resources Formed	
[KAZAKHSTANSKAYA PRAVDA 12 Feb]	77
Kapustin Yar Test Site Environmental Damage Detailed [SPASENIYE No 8, Mar]	78
Potassium Cyanide Allegedly Buried at Semipalatinsk [KOMSOMOLSKAYA PRAVDA 11 Apr]	80
Water Supply Problems in Turkmenistan Examined [TURKMENSKAYA ISKRA 6 Jan]	81
Turkmenistan Seen as 'Hostage' in Iran Nuclear Deal [NEZAVISIMAYA GAZETA 25 Apr]	83
EBRD Seeks To Improve Nuclear Safety in Lithuania [Vilnius Radio 7 Apr]	84

WEST EUROPE

REGIONAL AFFAIRS

European Countries Face 'Globe-Trotting Garbage' Issue [Paris LES ECHOS 9 Apr]	85
--	----

DENMARK

Government's Long-Term Development Plan Viewed [BERLINGSKE TIDENDE 11 Apr]	85
--	----

FRANCE

Firms Increase Waste Management Research [L'USINE NOUVELLE 27 Feb]	86
Industrialists Form New Environmental Organization [LE MONDE 22-23 Mar]	87

GERMANY

New Solar Cell Production Process Presented [TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN 29 Jan]	88
Recyclable Plastic for Auto Radiator Grilles Tested [UMWELTMAGAZIN No 1-2, Feb]	89
Survey Assesses Solar Power Station Potential [WISSENSCHAFT WIRTSCHAFT POLITIK 12 Feb]	89
Environmental Biotechnology Program Launched [TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN 18 Feb]	90
Latest European Ozone Research Results Show Negative Trend [TECHNOLOGIE-NACHRICHTEN MANAGEMENT INFORMATIONEN 18 Feb]	91
Project Develops Promising Diesel Fuel From Rape Oil [TECHNOLOGIE-NACHRICHTEN MANAGEMENT INFORMATIONEN 18 Feb]	92
Trials Confirm Incineration Destroys CFCs [TECHNOLOGIE-NACHRICHTEN MANAGEMENT-INFORMATIONEN 18 Feb]	92
University Develops Fluidized Bed Electrolysis of Chlorinated Hydrocarbons [VDI NACHRICHTEN 21 Feb]	93
Germany's Position, Prospects in Photovoltaics Assessed [HANDELSBLATT 5 Mar]	94
Crops Proposed for Fuel, Chemical Raw Materials [HANDELSBLATT 19 Mar]	95
Results of Environment Minister's Talks With China Assessed [DPA 13 Apr]	96

NETHERLANDS

Treasury Minister Calls for More Nuclear Power Plants [Radio Netherlands 22 Apr]	97
--	----

NORWAY

Joint Russian Nuclear Waste Mapping Project Foreseen [AFTENPOSTEN 7 Apr]	97
Government for Unified Approach to Nuclear Waste [AFTENPOSTEN 9 Apr]	98

SWEDEN

Eastern Europe, CIS Aid Package Announced [Stockholm Radio 21 Apr]	98
--	----

SWITZERLAND

Company Develops Soluble, Recyclable Plastics [UMWELTMAGAZIN No 1-2, Feb]	99
---	----

UNITED KINGDOM

EC Countries Asked To Limit Toxic Waste Shipments [THE DAILY TELEGRAPH 24 Mar]	99
--	----

Convention on Baltic Sea Environmental Protection Signed

*92WN0437C Moscow IZVESTIYA in Russian
14 Apr 92 Morning Edition p 7*

[Article by Marat Zubko: "1991 Helsinki Convention Signed: Ecological Cordon on the Baltic"]

[Text] Helsinki—Ministers from 12 countries and a representative of the European Community, meeting in Finlandia Palace in Helsinki, have signed a new 1992 Convention on Protecting the Baltic Sea Basin Environment.

The previous convention was signed back in 1974—that is, before the adoption of the Final Act of the Conference on Security and Cooperation in Europe—and was among those international acts that established new relations among states on the European continent. That convention served its purpose. What about the new one? How does it differ from the old convention?

First, the 1992 convention unites in the cause of protecting the Baltic sea environment not just the littoral states (of which they are now nine—Germany, Denmark, Latvia, Lithuania, Poland, Russia, Finland, Sweden, and Estonia), but also countries of the Baltic region, which is to say countries whose territories' are traversed, even if only partly, by rivers that empty into that sea (Byelarus, Norway, Ukraine, and Czechoslovakia). Thirteen states in all, although the minister from Byelarus was unable to go to Helsinki. It was said at the conference that other duties had prevented him from coming.

Second, the convention has become more explicit. The convention and its accompanying documents, for example, name more than 150 enterprises and installations on the territory of the basin's states that are pollution sources for the waters of the Baltic Sea. So virtually all the sea's polluters have now been identified, including some in our country, in the area of St. Petersburg.

Moreover, the documents cite calculations of how much it will cost reequip such enterprises or "hot spots, as they are called in the convention.

Of course, just how effectively this job can be done will largely depend on money. "Yet many countries of the Baltic basin are obviously poor. Where will they come up with such appropriations?" asked one journalist at a press conference held immediately after the signing. The answer was this: The objective has been formulated, and that's the most important thing; the funds will have to be found as they become available.

We should add to that answer that efforts to save the Baltic will be promoted by the European Community, the European Bank for Reconstruction and Development, the European Investment Bank, the World Bank, and the Northern Investment Bank.

This correspondent asked the ministers to what extent the new documents develop the decisions of Baltic region chiefs of state in the Swiss city of Ronneby in

1990, where it was said that a "real breakthrough" had been achieved in the cause of protecting the Baltic Sea.

Finnish Minister of Environment S. Pietikalinen responded that in principle, both the convention itself and the other documents "are moving in the same breakthrough direction."

His Danish counterpart, P. Moeller, added: "The most important thing now is to make a breakthrough in solving the technological problems of the fight to save the Baltic Sea environment, and to enhance the quality of measures adopted and monitor their effectiveness. We think we did a good job in this area."

Caspian Sea States Urged To Establish Cooperation Council

*LD1504083592 Tehran IRNA in English
0655 GMT 15 Apr 92*

[Text] Sari, Mazandaran Prov., April 15 (IRNA)—An expert from the environment protection organization of Iran Tuesday called for establishment of a joint research center and cooperation council by littoral states of the Caspian Sea for preservation of marine life and environment.

Speaking at the inaugural session of a 3-day seminar on marine and meteorological sciences, here, Mohammad Seyyed Hoseyni said while oil explorations of the past years by Kazakhstan and Azerbaijan in their coastal waters have improved their economy, they have posed dangers on marine environment of the whole Caspian Sea region.

"Presently the daily production of 500,000 barrels of oil in eastern Baku, Azerbaijan Republic, has caused pollution endangering environment, upsetting the ecological balance and destroying marine life," Hussein said.

Baku's urban and industrial wastes continue to pour into the Caspian Sea, destroying marine life in a range of several kilometers, he added.

He quoted the chief of state committee of Azerbaijan for Caspian Sea, Mansourov, as saying that 500 million cubic meters of sewage pours into the Caspian from Baku annually, of which only 300 million cubic meters are filtered.

In the meantime, the Russian Republic pours extensive amounts of industrial wastes to Volga River. The Turkmen Republic and Iran also contribute to polluting the sea.

Environmentalists are discussing air pollution in Iran, release of radioactive rays resulting from Chernobyl accident as well as pollution in the Caspian Sea because of occasional oil leak and their impact on the marine life and environment.

Eminent Persons' Forum Considers Global Clean-Up Costs

Carter, Strong, Miyazawa Address Meeting

OW1504092592 Tokyo KYODO in English
0845 GMT 15 Apr 92

[Text] Tokyo, 15 April (KYODO)—Former U.S. President Jimmy Carter said Wednesday the current government in Washington "has done the most to obstruct progress" toward an international agreement on curbing carbon dioxide emissions.

Carter told the opening session of the three-day Eminent Persons' meeting on environment and development that most of the world's environmental problems have been caused by the richest nations.

The Eminent Persons' meeting brings together 29 delegates, including former presidents and governors of central banks to consider proposals for a global clean-up for presentation to the June 3-14 Earth Summit in Rio de Janeiro, Brazil.

In a keynote address to the meeting, Carter strongly criticized the administration of President George Bush for its failure to agree with most other countries at international environmental forums on the need to set agreed limits on carbon dioxide, considered one of the main causes of global warming.

The United States is the world's largest single producer of carbon dioxide.

"My hope is that when we reach Rio de Janeiro we will not lower the world's standards on environmental quality simply to accommodate the shortsightedness of a few powerful nations on these key issues," Carter said.

Carter also gave his support, in principle, to many of the suggestions incorporated in a declaration drawn up by a coalition of environmentalist nongovernmental organizations at a so-called "Ordinary People's Meeting" in Tokyo on Tuesday.

Representatives of the coalition, which included Greenpeace International, the National Wildlife Federation and the '92 NGO Forum, Japan, presented their declaration to Earth Summit secretary general Maurice Strong on Wednesday morning.

Carter said he agreed with one of the main points in the coalition's declaration, namely a demand for more "transparency" and accountability in the Global Environment Facility, a fund established by the World Bank to provide money for environmental projects.

Strong, who also addressed the meeting, departed from the earlier prepared text of his welcoming speech to give his support to the same principle.

"We must heed their concerns for more transparency, more participation and accountability in existing institutional structures and processes and a more grass-roots, bottom-up rather than top-down control of resources," Strong said.

Strong also said the Earth Summit, formally known as the United Nations Conference on Environment and Development (UNCED), provides a "unique opportunity" for Japan to assert leadership in the field of global environmental security.

While Carter and Strong departed from their initially prepared remarks to make direct references to the "Ordinary Persons' Meeting" declaration, Prime Minister Kiichi Miyazawa and conference cohost and former premier Noboru Takeshita stuck to their prepared texts in their welcoming remarks.

Takeshita told the meeting that Japan can set an example to the rest of the world because it has overcome its pollution problems through the efforts of the public and private sectors.

Miyazawa, who will not be present during the meeting's closed-door deliberations, called on the meeting to recognize the need for international cooperation on environmental issues which he said have now become "global in scale."

Miyazawa expressed the necessity of enacting legislation for global environment.

"I have instructed the relevant ministries to review the legal framework to make it more suited to this new era of global concern," Miyazawa said.

Delegates to the Eminent Persons' meeting include former Chinese foreign minister Huang Hua, former prime minister of Singapore Lee Kuan Yew, two former presidents of the World Bank Barber Conable and Robert McNamara, and former president of Costa Rica Oscar Arias Sanchez.

Text of Declaration on Financing Global Environment

OW1704113092 Tokyo KYODO in English
1913 GMT 17 Apr 92

[Text] Tokyo, April 17 (KYODO)—Following is the full text of the Tokyo Declaration on Financing Global Environment and Development issued by the Eminent Persons' Meeting in Tokyo on Friday.

The human future is at risk. Wasteful patterns of production and consumption in industrialized countries together with pervasive poverty and population growth in developing countries are leading to the destruction of the earth's ecological base and intolerable levels of human suffering and deprivation. This dangerous course jeopardizes the prospects for the survival and well-being of future generations.

It is time to reevaluate the thinking which underlies our present society. A new environmental ethics needs to be established, and new value systems accepted and supported by the citizens and grassroots levels, and new approaches toward development based on the principles of strengthening the links between people, environment and development; adjusting our behavior to the natural order that lies behind the limited and vulnerable ecosystems of the earth; sharing the environmental space equitably among all countries of the world, and acting to meet the needs of the future as well as present generations.

The June Earth Summit in Rio offers a unique opportunity to forge a global partnership for sustainable development to eradicate poverty and to safeguard the environment upon which human life depends.

This global partnership must start with a commitment by the developed countries to sharply reduce the burden they impose on the carrying capacity of the earth's ecosystem. They must change to non-destructive production and consumption patterns and stand ready to support developing countries, which on their part, should articulate new strategies to accelerate the pace of their development and deal effectively with both global and national environmental concerns.

In two years of intensive preparations and negotiations, the 175 members of the United Nations have established the basis for agreement in Rio on a comprehensive program of cooperative action, Agenda 21. It includes a broad range of practical measures designed to effect the transition to sustainable development.

Accordingly, we appeal to leaders of all governments to come to the Earth Summit at Rio prepared to commit themselves to the measures required to give effect to a new global partnership for sustainable development.

The main part of the expenditures in the developing countries to implement Agenda 21, which amount to over 600 billion dollars a year, will come from developing countries themselves. Developing countries will require a supportive international and national economic environment to enable them to mobilize more internal resources.

Of primary importance to developing countries therefore is:

First, increased access to the markets of industrialized countries. In this context, an immediate and meaningful conclusion of the Uruguay Round is absolutely essential.

Second, increased inflow of private investment and technology transfer into developing countries.

Third, durable solutions to the debt problems of developing countries will be a prerequisite for their transition to sustainable development.

Fourth, very substantial external support will be needed to complement these efforts.

The UNCED Secretariat has estimated that international concessional financing on the order of 125 billion dollars will be required annually, a figure that should not be surprising given the scale of the efforts needed. The expenditures for both developing and developed countries may appear large, but, on the other hand, they are modest in relation to worldwide military expenditures of some 1 trillion dollars per year and the similarly large amounts of tax concessions and subsidies through which governments encourage and support policies and activities that often damage the environment. In view of the magnitude of the external resources needed for implementation of agenda 21, the 0.7 percent ODA/GNP target acquires new relevance. Financing for sustainable development should not be viewed as "foreign aid" in traditional terms, it is an essential investment in global environmental security.

It may take time to make time for many developing countries to make the changes and their own policies and management structure required to utilize new funds effectively in their transition to sustainable development. It will also take time for the industrialized countries to establish the revenue sources required to provide such funding. For that purpose in many countries the saving ratios have to be increased while pursuing policies of sustained economic growth.

New and additional financial resources should support the processes of fundamental change which the transition to sustainable development requires.

At our meeting in Tokyo, we focused especially on how funding for sustainable development might be increased to finance implementation of the agenda 21 action program. To that end, we address the following specific recommendations to the governments of the world.

At UNCED, traditional donors, as well as other countries in a position to shoulder a part of the burden, should each enter into a firm and monitorable commitment with regard to ODA in order to ensure a significant increase of resources for sustainable development.

Equally, developing countries should commit to establishing open, participatory and monitorable implementation systems which give confidence that resources from all sources are well used for the purposes intended.

Immediate significant support should be extended to developing countries for capacity building and technology transfer and for programs and projects ready for implementation, as a credible commitment to the new partnership. Rio is the place for an initial commitment by donors to increase funding for this purpose.

We call for establishment of a continuing process through which developing countries can enter into long-term compacts with donors for funding of their external needs for implementation of Agenda 21 measures under mutually agreed conditions which insure availability of such funds over time and their effective utilization. The

World Bank consultative groups and UNDP roundtables should be utilized for the country-level negotiations this would entail.

Japan holds a remarkable record in combining substantial improvements in its domestic environment with unprecedented levels of economic growth. This provides the basis for Japanese leadership in global environment and development cooperation commensurate with its growing weight in the world economy. We appeal to Japan, along with other industrial nations, to assert their leadership at the Earth Summit. We urge other industrial nations to join with Japan prior to the Rio Conference to indicate with some specificity their support for global environment and development cooperation.

Channels and Mechanisms

- a revised and strengthened Global Environment Facility (GEF), to finance programs related to global environmental issues such as the ozone layer, climate change, biodiversity and oceans as well as other programs of global significance in Agenda 21. The GEF should be fully representative in its decision-making process and transparent in its operations. In order to reach agreement as quickly as possible, we suggest that the finance, economy and planning ministers scheduled to be in Washington at the end of this month for the meetings of the [word indistinct] Interim and Development Committees and of the GEF participants, hold a specific meeting on this issue in order to evaluate this proposal and to work out its operational guidelines.
- IDA, the most concessional window of the World Bank. A substantial environmentally committed increment, over and above the real volume of IDA-9, would enable the bank to integrate and promote programs in the poorer countries which support sustainable development objectives elaborated in Agenda 21.
- the regional development banks, to support programs of regional concern not covered by GEF.
- UNDP, to enable it to take the lead in supporting and improving capacity building and technology transfer at the national level;
- UNEP, to strengthen its key role as the global environmental agency and center of leadership;
- United Nations University and its subsidiary research and training centers to undertake studies in global environment;
- additional funding to U.N. specialized agencies and other U.N. bodies assigned a wide range of tasks under Agenda 21;
- funding for sustainable development through bilateral channels.
- unilateral initiatives such as national foundations;
- measures including tax incentives to encourage indigenous and foreign private investment and technology cooperation for sustainable development and measures to improve the coordination and mutual support of private investment and public concessional funds.
- privately supported agencies which have close links to nongovernmental groups of developing countries and which often work most effectively at community and household levels.
- the use of tradable permits should continue to be explored as a means of harnessing market mechanisms to increase efficiency and the pressures to reduce pollution; they might in addition provide a source of external funding for developing countries' environmental priorities.

First World Congress on Tourism, Environment Held in Belize

FL2904171592 Bridgetown CANA in English
1659 GMT 29 Apr 92

[Text] Belize City, April 29, CANA—Hundreds of international delegates are in Belize this week for the first world congress on tourism and the environment. The delegates include environmentalists, ecologists, government policy analysts, tour operators and travel agents, as well as ordinary people from rural communities who are trying to earn a living from nature-based tourism. During plenary sessions and workshops they hope to address the issues of the management and development of the unique natural resources on which tourism depends.

The congress has been jointly organised by the Belize Tourist Board and an American Company, In-Sync Productions of Colorado. A spokeswoman for In-Sync, Diane Kelsay said 350 international delegates are attending with a further 100 from Belize itself. Kelsay said there were many delegates from Central and South America and some had come from as far away as Jakarta, New Guinea and New Zealand. "Most everyone who is famous in conservation is here," she said.

Speaking at opening ceremonies, Tuesday morning, Belize's tourism and environment minister, Glenn Godfrey stressed the importance of development policies that protect natural resources. Godfrey said that while ecotourism is a useful tool in preserving areas from over-exploitation, it could also help raise the standard of living for a country like Belize.

"Income from ecotourism could be an important source of funds for relieving poverty in developing countries," he said. In an interview with independent radio KREM, Godfrey said Belize was recognised as a leader for the care it takes in its environment especially in relation to tourism. He said this week's congress had been called so that people involved in ecotourism could come up with a common strategy to present to the earth summit in Rio de Janeiro in June.

REGIONAL AFFAIRS

SACIM Countries Plan To Sell Ivory, Elephant Products

MB1604153792 Johannesburg SAPA in English
1434 GMT 16 Apr 92

[Text] Windhoek, April 16 (SAPA)—Botswana, Malawi, Namibia and Zimbabwe are to continue putting together controls and mechanisms to market internationally ivory and other wildlife products through the Southern African Centre for Ivory Marketing (SACIM), according to a press statement issued in Windhoek on Thursday.

"The four countries wish to reconfirm that every effort will be made so that such controls will prevent any poached ivory being laundered through the system," the four countries said after a two-day SACIM meeting which South Africa attended as an observer.

The southern African states failed in a bid at an international environmental meeting in Japan last month to have African elephants downlisted on a schedule which would permit limited and controlled trade in elephant products, including ivory.

Their proposal was put at the Convention on International Trade in Endangered Species (CITES) at Kyoto last month following a 1989 CITES resolution banning international trade in ivory that became effective a year later.

It included a continued voluntary moratorium on ivory trade, a willingness to work with other nations on developing an ivory trace system and to submit such a system at the next CITES meeting.

At last month's Kyoto meeting at which "emotions ran stronger than objectivity" the four countries had no choice but to withdraw their proposal said.

"This was a bitter disappointment since the result effectively asked Botswana, Malawi, Namibia and Zimbabwe to give up their successful management of elephants," it added.

At the Windhoek meeting, attended by ministers responsible for wildlife in the respective countries, the SACIM states reaffirmed their belief that sustainable utilisation of wildlife was a key principle on which to base conservation.

"Inherent in this principle is the fact that trade can bring benefits, especially to the rural communities, whose participation in wildlife conservation is vital," the statement said, adding the four countries would continue to pursue conservation along those lines.

The ministers agreed "notwithstanding the frustration and perplexity that CITES provided in Kyoto" to recommend their countries should continue participating in CITES.

The decision should not be seen to detract from the need for CITES to work to support successful conservation based on sustainable trade.

"In particular the meeting concluded that CITES at present is retreating into a simplistic protectionist approach whereby Appendix I listing (that prohibits all trade) is seen as the optimum solution to any wildlife problem," the statement said, adding "CITES therefore was losing touch with the realities of wildlife management".

The SACIM states saw the need for CITES to fall into line with policies and conventions established at major international forums and were concerned at the disregard CITES decisions have in protecting biodiversity.

"The four countries will therefore be raising this issue at the forthcoming United Nations Conference on Environment and Development in Brazil in June," the statement said.

The mechanisms being put together to enable SACIM to begin marketing ivory include effective measures recommended by a panel of experts as well as concentrating on the transit and importing country situations.

The ministers also emphasised that research, information flow, management and conservation should be given their rightful place under the SACIM spirit of cooperation, the statement concluded.

SOUTH AFRICA

Security Implications of Expanded Game Park Viewed

92WN0368A London AFRICA CONFIDENTIAL
in English 21 Feb 92 pp 6-7

[Text] Plans are now well-advanced for the expansion of the Kruger National Park into a vast game reserve, taking in some 40,000 square kilometres of new land on both sides of the South African-Mozambican border. The World Bank is supporting the project with US\$12 million for the development on the Mozambican side of the border, with promises of a further US\$12 million to follow. Some of those involved in the project speak of an even larger development, eventually expanding to incorporate the Gonarezhou reserve in Eastern Zimbabwe. Presidents F.W. de Klerk and Joaquim Chissano are expected to give approval for further developments in the near future.

The political implications of this are vast, given the considerable involvement by South African security personnel in the country's game parks. The Johannesburg WEEKLY MAIL newspaper has carried a series of stories showing how the National Parks' Service of KwaZulu, Chief Mangosuthu Buthelezi's fief, is infested with former Rhodesian Special Forces and security personnel. Among other disturbing aspects, they are known to have maintained surveillance on anthropologist

David Webster shortly before his 1989 murder, although there is no reason to believe the two events are connected. Webster is widely believed to have been killed because he had acquired information about a supply-route for the Resistencia Nacional Mocambicana (Renamo) between northern Natal and Mozambique.

The South African-Mozambican border is of vital strategic importance, sharing a frontier with KwaZulu and being so close to the Witwatersrand, South Africa's industrial heartland. Its importance has been apparent to military strategists and security experts for years. After Mozambican independence in 1975, the African National Congress based its military operations in southern Mozambique and launched many of its most spectacular operations from there. Pretoria's response was to intensify support for Renamo, which went on to plunge the whole of Mozambique into civil war. The policy of destabilisation, as it was known in military parlance, successfully turned Mozambique from a sanctuary for anti-Pretoria guerrillas into a docile ally of South Africa. Pretoria's Directorate of Military Intelligence and Special Forces supplied Renamo by air, land and sea, and kept Renamo men and their South African auxiliaries at bases in South Africa, from which cross-border attacks were easy.

Military Intelligence officers set up trade-links for the supply of arms and were repaid with ivory and other commodities which they imported into South Africa.

Having wrested control of trans-shipment routes through the border-area in the mid-1980s, South African Military Intelligence and Special Forces specialists then made use of it in the other direction, channelling guns from Mozambique into the townships of the Witwatersrand to arm Inkatha and other Pretoria-friendly groups. The 1991 Inkathagate scandal demonstrated that Inkatha was also in receipt of South African government funds.

In the context of these developments and the expansion of the Kruger Park, some public interest has been directed at the role played by the British authorities and international environmental organisations. In 1987, Prince Bernhard of the Netherlands and a senior official at the headquarters of the World-Wide Fund for Nature (WWF) in Switzerland, working in his private capacity, established a plan known as Operation Lock. The plan's purpose was to acquire secret intelligence on the illicit trade in rhinoceros horn, and it used a team of British security personnel which included ex-members of Britain's Special Air Services (SAS) organised by the late Sir David Stirling. Founded in 1941 by Stirling, the SAS historically had very close links with both Rhodesian and South African Special Forces and with British intelligence (AC Vol 32 No 19). Operation Lock's objectives became known to both the WWF and another Swiss-based watchdog, the Convention on International Trade in Endangered Species (CITES). Some of the funding for the operation was channelled to South Africa via WWF South Africa.

The Operation Lock team acquired considerable information on the various clandestine trades across the Mozambique-Swaziland-South African borders and confirmed that Johannesburg was the main export point for ivory and rhino horn from the entire southern Africa region. The Operation Lock team discovered that the same trade-routes were used for guns, drugs, currency and gems.

When asked about links between Operation Lock and the WWF International, Robert SanGeorge, director of communications at WWF Headquarters in Geneva, told AFRICA CONFIDENTIAL: 'Operation Lock was designed by the then director of WWF for Africa, Dr. John Hanks, without authorisation. Hanks is a very respected conservationist, but we are extremely unhappy about what he did.' Although the WWF has said it had no direct role in Operation Lock, it has been established, from internal WWF documents that AFRICA CONFIDENTIAL has received, that WWF International knew of such a project as early as December 1987 and agreed to work with it and share the project's findings.

When asked whether any action was to be taken on the issue, SanGeorge said: 'WWF South Africa is not a wholly-owned subsidiary of WWF International. But they have told us they will take steps to ensure nothing like Operation Lock ever happens again.' In a conversation with AFRICA CONFIDENTIAL, Hanks said: 'Operation Lock did a very good job and I accept full responsibility for it.' Operation Lock's success in reducing poaching and illegal trade in ivory and rhino horn had not been acknowledged by its critics, Hanks added.

However, an official in the Endangered Species Protection Unit, run by the South African Police, said that while Operation Lock provided 'some valuable intelligence' it did not lead directly to arrests of smugglers or poachers. South Africa remains a major centre for smuggled ivory and rhino horn according to several conservation groups.

WWF Headquarters has admitted giving money directly to anti-poaching units set up in the Etosha and Damaraland areas of northern Namibia under the auspices of Operation Lock. When asked about the WWF's involvement with these units, SanGeorge said: 'The projects in Etosha and Damaraland that we funded were caught up in Operation Lock. From our perspective the projects were a total success, they were a community-based anti-poaching effort ... poaching decreased dramatically.'

When last year the WWF launched an international campaign against the rhino horn trade, it did not mention that South Africa was a major staging post in the illegal trade in ivory and rhino horn. The WWF recently called for a partial downgrading of the restrictions on elephant use by instituting a split listing, that would permit elephants to be used for meat or hides but not for

ivory. Some conservationists believe if any such concession were made, it could lead to a full lifting of the ban on ivory (see Box).

South Africa has been seeking to overturn the ban on ivory-trading imposed at the CITES Seventh Conference in 1989, which is reckoned by many leading environmental organisations to have had considerable success in reducing the international ivory trade. In order to evaluate a South African proposal to be allowed partial exemption from the ban, CITES sent a panel of experts to assess the position and to see whether South Africa was able to control the illicit ivory trade through its territory.

The CITES experts say in their report that 'circumstantial evidence exists that significant quantities of ivory have been and continue to be exported illegally through South Africa from neighbouring states' but that it 'was not in a position to assess' allegations of the South African security forces' involvement in such trafficking. A leading independent monitoring group, the Environmental Investigation Agency, described the CITES report as a 'whitewash.'

Little has stopped the South African security forces from continuing their commerce in illicit goods, including ivory, while at the same time turning the most sensitive region of southern Africa into a vast, depopulated zone in which South African secret servicemen, who have infiltrated some conservation projects, can operate. Military Intelligence and Special Forces officers have perfected this technique of constant transformation. As an officer from Koevoet, the ferocious anti-guerrilla units that operated in Namibia under South African rule, once put it, this is like the process of a snake shedding its skin but re-emerging in a replacement. It looks different but it remains the same animal.

[Boxed item]

Elephants and Ivory

On 2 March the Convention on International Trade in Endangered Species (CITES) meets in Kyoto, Japan, and the African elephant will again top the agenda. Zimbabwe and South Africa have been joined by Botswana, Namibia and Malawi in efforts to reopen ivory trading by 'downlisting' their elephant populations from the protected category of Appendix I to the unprotected Appendix 2.

Since CITES passed the international trade ban on elephant products in October 1989, Zimbabwe and South Africa have formed an alliance to spearhead efforts to overturn the decision. Backing them are a powerful range of interests including Hong Kong ivory traders and American safari hunting operators. Most recently, there has been a qualified endorsement from the Worldwide Fund for Nature (WWF) to trade elephant skins and meat.

In the United States, Doug Crowe, assistant to John Turner, Director of the U.S Fish and Wildlife Service, has wrested control of U.S elephant policy and is determined to do a deal with Zimbabwe. His appointment means the service no longer favours a total ban. Also campaigning is Congressman Jack Field representing U.S hunting interests.

However, Zimbabwe's high-profile campaign is disintegrating as allegations of widespread poaching of elephants and rhinoceros by government troops and staff of the Department of National Parks and Wildlife Management circulate in the Western press. The growing scandal, also involving South Africa, is frightening their allies in the U.S administration.

By repeatedly claiming superior elephant management programmes, South Africa and Zimbabwe offered themselves as conservation models for the rest of Africa. However, poaching in Zimbabwe is rife. The war in Mozambique gave an opportunity for army commanders to use their troops to poach elephant and rhino. The leader of the Resistencia Nacional Mocambicana (Renamo), Afonso Dhaklama, stated in April 1991 that Zimbabwean troops were poaching elephants in several specified areas of Mozambique. The family of murdered army Captain Edwin Nleya claim he was killed after he threatened to expose poaching and smuggling. They say the Zimbabwe Army's Special Investigation Bureaus and the Central Intelligence Organisation are implicated in his death, but no action has been taken to bring his killers to justice.

The Mozambican civil war has also affected South Africa's elephants, 95 per cent of which live in the Kruger National Park. The park has been an essential conduit of covert support for Renamo, and is thus heavily militarised. A game warden, Ludwig Wagner, was recently imprisoned for five years for killing 27 rhino within its military zone. In April 1991 a Renamo deserter claimed that Renamo was still selling ivory across the border to white South Africans.

Conservation groups claim that elephants face complete elimination in the civil war which has devastated Mozambique: at least 80 per cent have been killed in the past decade.

Recently South African middlemen tried to broker the sale of 84 tonnes of ivory held by the government of Burundi. The effort drew attention to the laxity of South Africa's laws prohibiting ivory trading: no action can be taken unless the ivory is actually flown into the country. In a taped conversation with a potential buyer in South Africa, one of the middlemen offered to provide a plane to fly the ivory non-stop to South Korea.

Dr. Robbie Robinson, head of South Africa's National Parks Department, has voiced strong support for the maintenance of the ban. But the government has decided to persist in its attempts to reopen the ivory trade, despite its wariness of the impending Mozambique scandal.

Zambia's new government may have dealt the final blow to Zimbabwe's faltering pro-ivory initiative by withdrawing its support for the downlisting proposal. The Zambian authorities ordered a public burning of the country's entire ivory stock on 14 February. Last December, the Minister of Tourism, General Christon Tembo, discovered that the country's elephant population had been reduced to a mere 20,000 animals, half the 38,000 claimed in the Zimbabwean-drafted downlisting proposal. Even worse, he found that the chief scientific officer of the National Parks Wildlife Service had never been shown the proposal that was sent to CITES.

Gen. Tembo has now written to his ministerial colleagues in Zimbabwe asking for the withdrawal of the downlisting proposal to CITES, because of inadequate enforcement capacity in the region and due to continuing uncertainty about the numbers of elephants. Zambia's request puts Zimbabwe on the spot as the two countries share common elephant populations. Although many Zambian poachers have been killed in Zimbabwe, claims by Harare that only Zambians are killing rhino and elephant in Zimbabwe have won little credence in Lusaka.

Zimbabwe's fall-back position is to adopt the WWF proposal: accept a downlisting and sell hides only for the next two years. At the next CITES meeting two years later Zimbabwe could use this as a basis to conclude its campaign by reopening ivory trading. Zimbabwe's Director of National Parks, Willie Nduku, recently flew to Washington to try to confirm the downlisting deal. Whether President Bush, who claimed on election that he wanted to be known as the 'environmental president', will accept the blame for removing international protection of the African elephant in the run-up to a closely contested re-election campaign is uncertain. But conservationists believe the ghosts from the killing fields of Mozambique will come back to haunt Zimbabwe and South Africa at the CITES meeting in March. [End of box]

Lions Reintroduced Into Natal Game Park

92WN0369A Cape Town *WEEKEND ARGUS*
in English 22 Feb 92 p 14

[Article by Caroline Hurry: "Big Cats Lurch Into a New Life"]

[Text] Johannesburg—Maputaland's first lions in 150 years have been released at Phinda—the 15,000-hectare new private game reserve between Mkuzi and Lake St. Lucia.

The two male and three female lions, captured on a private reserve adjoining Kruger National Park, are the first free-ranging lions on private land in Natal. The only others are found in the Umfolozi/Hlukluwe complex.

The lions will add to the big-game animals—elephant, rhino and cheetah—recently released on the Phinda in

one of the biggest game re-stocking exercises seen on private land in South Africa.

The lion reintroduction heralds the advent of the Big Five in Maputaland, marking this region as a premier wildlife tourist destination.

Phinda general manager Mr. Les Carlisle said private landowners in Natal had previously been prevented from keeping lions as, according to an old provincial ordinance, any wild lion in Natal was the responsibility of the Natal Parks Board.

A welcome awaited the big cats, who arrived in a truck this week. Lunch consisting of three fresh impala carcasses was laid on for the reluctant celebrities. As the welcoming party of photographers, farmers and game rangers pressed forward, the doors opened to reveal five lions stretched on a mattress.

"These guys are tripping on the animal equivalent of Valium and angel dust," remarked game capturer Karl Rosenberg who had accompanied the big cats.

The lions were carried to their new home, where they survived their surroundings with bemused eyes. Like human beings with hangovers, they lurched, falling over their huge paws and bumping into branches.

"The buck here are in for a rude shock," remarked Mr. Carlisle. "They have never had to contend with lions before—but they'll soon learn. Initially this reserve will resemble a takeaway joint as far as the lions are concerned."

Phinda has introduced the Trovan ID system to absolve the Natal Parks Board from any responsibility should lions escape from the reserve.

This involves inserting a coded magnetic transponder beneath the skin of the predators before they are released. Each transponder is coded and can be read with a magnetic reader in order to identify individual animals.

This new system—introduced a year ago to South Africa—has won the approval of the local farmers' association, who for the first time in Natal have welcomed the granting of a permit for lions to a private landowner.

Mr. Carlisle said Phinda had also secured approval from neighbouring Kwazulu communities who approved the lion permit in the knowledge that tourism would provide economic benefits for the region.

The Phinda Resource Reserve has recently been consolidated and a variety of new species have been added to the thousands of animals which already exist.

Called a "resource reserve" because of its emphasis on sustainable harvesting of natural resources, Phinda has

as its core philosophy the benefitting of local communities through direct employment, skills training, resource harvesting and joint business ventures.

Phinda also plans to incorporate local people into the benefits of the reserve through harvesting of lala palm, wood and medicinal plants as well as the establishment of joint ventures in the areas of transport, butcheries, charcoal manufacture, brick-making, vegetable, poultry and fish production.

"Phinda is first and foremost a commercial venture," says the executive chairman, John Varty.

Apartheid Era Linked to Environmental Damage
92WN0414B Cape Town *THE ARGUS* in English
5 Mar 92 p 12

[Article by John Yeld]

[Text] Apartheid failed to achieve the hoped-for economic development, aggravated poverty, and resulted in agricultural over-exploitation and incalculable environmental damage, the United Nations has been told.

This is one of the points in a report Building the Foundation for Sustainable Development in South Africa, prepared for the Department of Environment Affairs by the CSIR [Council for Scientific & Industrial Research].

The substantial document has been sent to the secretariat of the United Nations Conference on Environment and Development (UNCED)—the Earth Summit—which is being held in Rio de Janeiro in June.

The secretariat is using similar documents from many UN member countries as the basis for negotiating international environmental conventions that will be signed by heads of state in Rio during the summit.

Conventions expected to be ready for signature include those on global warming and climate change, ozone depletion and rain-forest destruction. The summit will also seek agreement on an international agenda for integrating development and environmental conservation into the 21st century.

Although "apartheid" is not used directly, the South African report makes it clear that government policies during the apartheid era were incompatible with the concept of sustainable development.

Measures instituted since the 1930s to address the degradation of agricultural land had in retrospect been short-sighted and even counter-productive.

The state had spent "thousands of millions" of rands in an attempt to create a command economy in the agricultural sector.

"Since ecological systems in South Africa are driven by events, particularly by rainfall, the capacity of such government interventions to alter the outcome significantly is limited."

In a section headed "Policy and institutional failure", the report noted that attempts to drive agriculture through a command economy had failed.

"It failed either to halt the damage being done or to make the agricultural industry more successful.

"It was also shown that the policy of moving large numbers of people to the homelands failed to lead to the economic development hoped for, and that it aggravated poverty and resulted in agricultural over-exploitation and, consequently, incalculable environmental damage."

There was a climate for change in South Africa and opportunities existed to find new solutions.

"All sorts of damaging policies of the past have recently been swept away, including the drought relief and other agricultural subsidies that used to distort incentives.

"New approaches to water pollution control and to hazardous waste management are being developed."

Projects such as the ecotourism utilization strategy at Mthethomusha in Kangwane, and efforts by the Wilderness lakes and Richtersveld contractual national parks, reflected a new thinking in conservation, all involving local communities in their management, the report continued.

Several rural development projects, designed by research groups such as the University of Natal's Institute for Natural Resources or by consultant groups such as the Environmental Development Agency, were beginning to demonstrate successful sustainable development.

The recent President's Council report on an environmental management system for South Africa—which it quotes widely—provided an immediate opportunity to look for new approaches to link economic growth, environmental conservation and other needs within an overall framework of sustainable development, the report stated.

"UNCED comes at a very opportune time for South Africa, which has experience and expertise to offer the world and a pressing need to learn from the experiences of others.

"Moreover, anticipating the likely implications of global change, and managing these implications, South Africa will have to join the rest of the world community."

Population Growth Termed Greatest Threat to Environment

92WN0414C Cape Town *THE ARGUS* in English
5 Mar 92 p 12

[Text] South Africa's population growth has outstripped economic growth for several years and is likely to do so for years to come, a Department of Environment Affairs report states.

It points out that the recent President's Council report, A National Environmental Management System, identified population growth and its associated poverty as the greatest single threat to the environment.

Resource destruction results when large numbers of poor people compete for scarce resources and lack meaningful alternatives, the report continues.

"Poor people have a greater direct dependence on the natural environment, and the alleviation of poverty will reduce pressures on such important environmental resources as trees and soil.

"The potential desertification of large portions of South Africa as a result of water shortages and the over-exploitation of land are major contributors to the threat of environmental degradation."

There is an enormous backlog in housing, education and job creation and the population growth rate has been outstripping economic growth for years.

"As a society, we are becoming poorer and poorer, and have less and less available to meet the backlog, less and less with which to help members of the new generation become successful contributors to the economy."

The word most frequently used in relation to the South African environment was "affordability," the report says.

Policy Changes in Cetacean Capture Announced

92WN0421A Cape Town *THE ARGUS* in English
12 Mar 92 p 16

[Article by John Yeld]

[Excerpts] Dolphins or killer whales unfortunate enough to land in a proposed dolphinarium on Reunion will definitely not come from South African waters.

And permits for scientific research which entails killing marine mammals will no longer be granted unconditionally, following changes in the Department of Sea Fisheries' policy.

These assurances have been given to Mrs. Nan Rice of the Dolphin Action and Protection by Sea Fisheries chief director Dr. Louis Botha, who said South Africa would not issue permits for the export of dolphins and killer whales to any country.

Mrs. Rice said that, despite earlier denials, a report had appeared in the Reunion press alleging that cetaceans (whales and dolphins) would be caught in South African waters for the proposed dolphinarium on the Indian Ocean island.

"Greenpeace France and a society calling itself Reseau Cetaces started campaigning and sending letters asking people to write to the French Minister of Environment.

"I eventually had to ask for Dr. Botha's assistance and I have also asked French Environment Minister Mr. Lalonde to inform anyone writing to him that South Africa is not involved."

Mrs. Rice said Dr. Botha had told her the granting of a permit for lethal research on dolphins, issued in 1985, would not be repeated.

Asked for confirmation, Dr. Botha told *THE ARGUS* the previous policy of freely granting permits had been changed and that any future applications for lethal research on cetaceans would be individually examined.

"We will only grant a permit if the research is absolutely justified," he said.

Mrs. Rice welcomed the changes, although she remained opposed to any lethal research, and said she wanted to see all scientific permit applications publicly reviewed. [passage omitted]

"The time has come for South Africa to fall in line with more enlightened countries, and to monitor research involving marine mammals far more strictly," Mrs. Rice said.

Debate Continues on Elephant Hunting

92WN0409A Johannesburg *THE WEEKLY MAIL*
in English 13-19 Mar 92 pp 24-26

[Article by Jacklyn Cock and Eddie Koch]

[Text] Should Africa's elephants be hunted to ensure their survival? That question, at the centre of a stormy spat between delegates to an international summit about conservation in Japan this week, raises ethical quandaries about the killing of animals for human profit and pleasure. Jacklyn Cock and Edie Koch, co-authors of a book on South Africa's environment adopt opposing positions on the most heated ecological controversy in recent times.

The Case for Hunting, by Eddie Koch

Imagine you live in a mud-and-thatch hut next to a field of maize that has managed to survive the drought in the Zambezi Valley. One night a behemoth ploughs through the flimsy fence around your paltry crop, pulverises the mielies into pulp, and petrifies the children who will go hungry for the next few months.

The closest that urban readers will come to understanding the way thousands of peasants in Africa experience elephants is to conjure up their old suburban nightmare: a runaway pantech-nikon crashes through your garden wall, crushes the BMW in the driveway and lands up spewing oil and diesel into the swimming pool.

Only, while lorries seldom smash up the property of the urban elite, elephants that destroy the livelihood of a peasant and his family are a daily reality in many parts of southern Africa. This is the reality that has been ignored by the majority of delegates to the eighth conference of signatory nations to the Convention on International Trade in Endangered Species (Cites), which this week refused to lift the international ban on trade in elephant products.

Efforts by five countries in southern Africa—Zimbabwe, Namibia, Malawi, Botswana and South Africa—to ease a ban on trade in elephant products failed amid unprecedented acrimony and bitterness at the Cites conference in Kyoto, Japan, this week.

The five nations, which together shelter a third of Africa's surviving elephant herds, angrily withdrew offers to continue a voluntary moratorium on trading in ivory in exchange for permission to sell elephant meat and hides after most delegates refused to consider down-listing the animals from Cites appendix 1, which bans all form of trade in animal products, to appendix 2, which allows a strictly monitored trade.

Four members of the quintet, excluding South Africa, are now threatening to defy the Cites ban by proceeding with a culling programme that will supply an independent cartel with tusks and other elephant products for sale on the international market.

This will, no doubt, play havoc with the international community's efforts to stamp out the illicit trade in ivory that threatens to drive Africa's elephants to extinction.

The southern African delegates argue that the world body has ignored the plight of people who must live cheek-by-jowl with elephants and other animals and who will only be persuaded to protect these beasts if they are given the right, and the means, to make a living from the "sustainable utilisation" of elephant products.

Read their lips. Sustainable utilisation means hunting.

Tony Ferrar, executive director of the Wildlife Society of Southern Africa and member of the South African delegation to Cites, notes that the only way rural people in Africa will be persuaded to protect endangered species is if they are able to hunt them in a controlled way and benefit materially from the sale of their products.

"It is worth remembering that 90 percent of Africa's elephants occur outside protected areas, where people and wildlife compete for resources. For a peasant family, housed in a dark and flimsy hut, such animals only have a real value when dead and preferably before they wipe out their mielie patch," says Ferrar.

His argument is backed by officials from an innovative project in Zimbabwe called Campfire (Communal Areas Management Programme for Indigenous Resources) who stress an irony: the only way for elephant herds to stay alive is for them to be culled.

Campfire officials point out that an elephant, which forages for 18 hours a day, eats its own weight in food every fortnight—and frequently this is made up of a harvest that belongs to rural people.

Zimbabwe's herds of some 70,000 elephants are already too large for the areas they are confined to and have to be culled anyway to prevent these regions from being devastated by the animals' voracious foraging habits.

Instead of being squeamish about this, the Campfire programmes undertake culling programmes and then share out the profits from sale of meat, hide and ivory among the communities that have to co-exist with the animals.

"Southern Africa now has a third of all Africa's elephants. While elephant numbers have declined in other parts of Africa, in Zimbabwe and Botswana their numbers have grown. Today in these countries there are too many animals for the land to support," says a recent Campfire publication.

"To survive elephants will have to show they can bring more money to the people than does growing crops or grazing cattle...Communities with wildlife can share out this money between themselves or use it to build a school, a clinic or anything else they need. And this money comes from the same animals—elephant, buffalo and lion—which in the past destroyed crops and killed livestock."

This principle is also vigorously promoted by the International Union for the Conservation of Nature which points out, in a memo to Cites delegates, that most species of endangered animals occur in the poorest countries of the world.

"In many cases, their long-term survival depends on local people having the incentive to secure their continued existence...If people cannot benefit in some manner from the sustainable use of wildlife, the result is likely to be the adoption of forms of land use that entail widespread habitat destruction and loss of biological diversity."

Some of the opponents of elephant culling and trade have been motivated by important moral and emotional arguments. Tke the British organisation, Care for the Wild, which highlights the extraordinary levels of brutality involved in culling elephants.

"Elephants share with man a sense of death. They often bury their dead by covering the body with sticks and leaves and they will grieve and mourn a loved one as deeply as any human," says a newsletter distributed by the organisation.

"Their suffering is transmitted through infrasound—elephant vocalisation we cannot hear that travels over long distances. Worse yet, there are those amongst the callous 'cullers' who tie terrorised calves to the bodies of their fallen elders for later sale to zoos and circuses."

Some conservationists have also questioned the method used in most culling programmes, which involves darting the animals with a tranquiliser before shooting them in the brain. They say the darts do not always render the animals unconscious, leaving them fully aware of the slaughter going on around them.

Culling methods, as well as the kinds of excesses mentioned by animal rights activists, cannot be ignored by proponents of sustainable utilisation and trade in animal products as a form of rural development. Cruelties have to be curbed, the hunt has to be strictly regulated and humane methods must be found.

But in the end there is a principle—one that has always been a cornerstone of the Germans Greens Party—which states that concern for the environment should never take place at the expense of human beings.

Culling and safari hunting, if strictly monitored, is a powerful way of generating income and improving the quality of life for rural people in many parts of Africa. And it is a pattern of rural development, a form of land use, that does not have the same detrimental ecological impact as crop farming or cattle grazing.

The culling of elephants in southern Africa is a reality. It has to happen simply to ensure that the environment in which the herds live is not destroyed.

And suburban anti-hunting sentiments are anathema to those rural communities in Africa which are involved in serious efforts to conserve wildlife while at the same time, improving the quality of their lives.

Says Ferrar: "Tangible economic benefits (derived from culling and other sustainable methods of exploiting wildlife) must reinforce the aesthetic and ecological values that are offered, somewhat patronisingly by First World people, as sufficient reasons for conservation."

...And the Case Against, by Jacklyn Cock

Hunting for food exists in nature. In many societies it is necessary for life. However, in modern urban industrial society hunting is done largely for sport. Today's "hunter roaming the plains" does so in designer khaki, equipped with four-wheel drives, high-powered rifles and walkie-talkies.

As such he is an anachronism signifying a dated notion of manliness; a notion exemplified by the trophy photographs that despoil Ernest Hemingway's house in Key West.

When Thomas Jefferson wrote that all men were created equal and endowed with certain inalienable rights, it was

understood he was talking only about white American males like himself. Since the American Revolution, however, rights have been extended, at least by law and social consensus, to include women and ethnic minorities. Many thoughtful people argue that the right to considerate and ethical treatment should be extended to animals as well. For example, in a recent interview the great American novelist, Alice Walker, drew a strong connection between human and animal rights. Her response to those who dismiss the concern with animal exploitation as "sentimental" is that they are people who have "destroyed great tracts of feeling in themselves."

"Green politics" calls for an end to violence against both animals and people. It denies that human beings are separate from the rest of nature; that nature only exists for man's comfort and convenience. This anthropocentric attitude towards nature that is exemplified by hunting for sport is rooted deep in our colonial past. There is on record a report to Governor Jan van Riebeeck by a faithful servant of the Dutch East India Company: "We plucked 700 seagulls as ordered by you to make two featherbeds and a pillow." However, Van Riebeeck himself issued South Africa's first colonial conservation measure on 14 April 1654 when he instructed officials to limit themselves to eating half a penguin per person per day. He was concerned that soon penguins would become extinct.

In modern South Africa there are conservationists who defend trophy or sport hunting as part of culling operations. Theirs is a powerful argument, especially if the revenue benefits impoverished rural communities and is used to promote development. It is an argument which may even be true in the short term. However, in the long term, sport hunting works against the ethic of reverence for all forms of life on which conservation depends. The ethic of reverence for life does not only apply if the species is threatened with extinction. We may be shocked today to read that Teddy Roosevelt once shot a giant panda bear for sport, or how in the last century hundreds of thousands of buffalo were shot by American sportsmen from the windows of trains.

Modern hunters would deplore such wastefulness. They like to point out that they eat what they kill. However, they do not hunt to eat. As Rolston writes: "Sport hunting uses nature as a playground on which there is killing. On human playgrounds the killing would be immoral."

There are occasions when legitimate playgrounds blur. In 1991 there was an investigation by the South African Defence Force into a report that "a group of officers" shot 12 Bushmen in Angola "when they failed to find game on a hunt near their base," according to the SUNDAY TIMES.

In the Gulf war an American pilot compared bombing fleeing Iranian soldiers to killing the cockroaches in his kitchen. In times of war and conflict the enemy is often defined as "other," as "animal." Defining people as

animals is used to strip them of rights, to locate them outside the boundaries of human equals humane treatment. In South Africa blacks are sometimes spoken of as animals. Last year a churchman said in court that "blacks are wild animals without souls."

The comparison of Africans with animals was a common theme in colonial thinking. According to an observer in Zambia this century, "in all their actions they (Africans) are so like animals that I question they have any brains," according to Karen Hansen's book, "Distant Companions." Another commented: "I say that a dog and a native are on a par. One should give them a good hiding when they have earned it, but one should never thrash either until one's temper has cooled."

Many people involved in the struggle against such obscene racism seem curiously anthropocentric—they are only concerned with their own species. It is this lack of concern which allows the abuse of animals to continue. Such abuse is highlighted in the cases of hunting for sport and vivisection. (The latter involves at least two million animals a year in South Africa in cruel and often unnecessary experiments, 85 percent of which are performed without anaesthetic.)

Caring about animal abuse often incurs the same kind of scorn that was meted out to the anti-slavery radicals for insisting that slaves were human beings with rights. Earlier this century Albert Schweitzer noted, "It was once considered stupid to think that coloured men were really human and must be treated humanely. This stupidity has become a truth. Today it is thought an exaggeration for all living things," according to Michael Tobias in "Deep Ecology." Such "consideration" is incompatible with hunting for sport.

Poachers Decimating Rhinos in North

*MB2704191292 Johannesburg Radio RSA in English
1500 GMT 27 Apr 92*

[Text] The head of Zimbabwe's paramilitary anti-poaching unit, Mr. Glen Tatton, has said despite the government's aggressive conservation measures, poachers are slaughtering rhinoceros at a rate that will wipe out one of the largest concentrations in Africa in two years.

Mr. Tatton said poachers were killing about 10 animals a month in an area near the Zambezi River in the north of the country. He said patrols have reported an increasing number of Zambian persons joining forces with poachers, probably as a result of the drought and worsening economic conditions in Zambian villages.

New Process for Treating Industrial Effluent Patented

*MB0305171892 Johannesburg South African
Broadcasting Corporation Network in English
1600 GMT 3 May 92*

[Text] South African scientists have patented a new process that turns industrial effluent into valuable by-products and which is expected to revolutionize international industries' approach to the treatment of effluent.

The developers of the project, scientists and engineers from the Universities of Pretoria and the Orange Free State, Sasol [South African Coal, Oil and Gas Corporation] and Professor At Pretorius of the Water Research Commission, said in a news release that the new process could result in effluent no longer posing a pollution problem. The effluent can now be purified to such a degree that it will yield clear water and by-products to be used as animal feed, saving invaluable foreign exchange. The process is being examined at a Sasol pilot plant with a view to introducing it at the plants in Secunda. Other industrial uses for the process are being tested.

The Water Research Council also reports that Eskom [Electricity Supply Commission] has been extremely successful in reducing the amount of water needed to generate electricity. The latest results published by Eskom show that only 1.6 liters of water per kilowatt-hour are consumed at present, compared with 2.6 liters in 1982. Much of the success has been attributed to the dry cooling method which is used on a large scale at power stations such as Matimba, near Ellisras and Kendal near Ogies. South Africa uses this method on a larger scale than any other country. Most power stations still use wet cooling methods.

Extensive research is being conducted into ways of refining the dry cooling system so that, in future, power stations will not have to be concentrated in areas where there is sufficient water.

Scientist Welcomes ANC's Environmental Proposals

*MB0505131692 Johannesburg BUSINESS DAY
in English 5 May 92 p 3*

[Report by Darius Sanai: "ANC environmental policy praised"]

[Text] A leading environmental scientist has welcomed the ANC's [African National Congress] environmental proposals in its policy document.

Wits [Witswatersrand] University nuclear science professor Harold Annegarn, who is conducting detailed research into environmental pollution in SA [South Africa], said the general policies advocated by the ANC were sound, and fell broadly in line with the latest international thinking on the environment. But he said the ANC document gave no details about how its proposed policies would be implemented. "Then implementation methods will make all the difference," he said.

The document proposes revising legislation to establish an effective system of environmental management, and the encouragement of ecotourism and environmental awareness, as well as stricter regulations on polluting industries.

But Annegarn said the section on mining indicated the ANC viewed the mining industry as "something of an ogre", disregarding its contribution to the economy.

Conservation Corporation chairman Dave Varty said there was hope political organisations were coming to grips with environmental issues.

ZAMBIA

Pollution Control Act Implemented

92WN0442A Lusaka *TIMES OF ZAMBIA* in English
8 Mar 92 p 9

[Text] The Environmental and Pollution Control Act to provide for stiff penalties against companies which violate anti-pollution laws has at last been implemented, Environment and Natural Resources Minister Mr. Keli Walubita announced in Lusaka yesterday.

The minister, who was opening a one-day Catholic Women's League (Lusaka diocese) seminar on environment at the Alliance Francaise, said the Act would provide for sentences of up to K100,000 per day for companies which failed to enforce measures aimed at cleaning the environment.

It was passed in 1990, but has not been implemented since then.

The ministry has appointed an Environmental Council which will become fully operational by the end of the month. A recruitment drive for professional inspectors is already underway.

Mr. Walubita said the inspectors would go round factories, townships and other public places to ensure that the law was being implemented.

The minister said the Government was concerned with the rise in environmental diseases like cholera, dysentery and others which had caused many deaths as well as pollution of the air and rivers brought about by the emission of agro and industrial chemicals and waste.

Mr. Walubita catalogued a number of companies involved in polluting the air and water as well as local authorities which failed to collect garbage in townships resulting in outbreaks of cholera and dysentery.

He singled out ZCCM [Zambia Consolidated Copper Mines] whose mines emitted sulphur oxide into the air and chemicals into the Kafue river from Chililabombwe and Kafue Textiles, Nitrogen Chemicals of Zambia and the Bata tannery which directly empty their waste into the river, while downstream are water works for Lusaka.

The minister called for involvement of the Catholic Women's League saying the MMD [Movement for Multiparty Democracy] Government, through his ministry and other related ministries, was committed to ensuring that women's concerns were ingrained at all levels of decision-making.—ZANA.

Academy of Sciences Evaluates Impact of Three Gorges Project

92WN0429A Beijing ZHONGGUO KEXUE BAO
[CHINA SCIENCE NEWS] in Chinese 13 Mar 92 p 1

[Article by reporter Liu Maosheng [0491 5399 0524]: "Chinese Academy of Sciences and Others Evaluate Environmental Impact of Three Gorges Project, It Has Advantages and Disadvantages, Scientists Take Precautions"]

[Text] The flood prevention, power generation, and shipping benefits of the Three Gorges project may benefit later generations but if we fail to eliminate or try to reduce its negative impacts on the ecology, environment, and other areas, it may also bring disaster to our descendants. For this reason, the Chinese Academy of Sciences [CAS] fostered its comprehensive advantages of a variety of disciplines and cooperated with the Chang Jiang Water Conservancy Commission's Water Resources Protection Institute to complete the "Chang Jiang Three Gorges Key Water Conservancy Facility Environmental Impact Report" that is now being examined by experts in the relevant departments in Beijing. This study made a comprehensive analysis and assessment of the economic, social, and environmental benefits of the Three Gorges project, provided the state with scientific and authoritative decision-making advice, and made an important contribution to economic construction and social development.

The scientific research personnel drew upon the experience of all parties in many years of research on the ecology and environment of the Three Gorges region, focused on the entire river basin, and used multilevel systematic analysis and comprehensive evaluation methods to make a comprehensive description of the beneficial impacts and negative impacts of the Three Gorges project on the ecology and environment. They feel that the primary beneficial impacts of the Three Gorges project on the ecology and environment are: effective control of water arriving in the upper reaches, improvement of the flood prevention capabilities of the middle and lower reaches of the Chang Jiang, especially the Jing Jiang segment, effectively reducing and preventing ecological and environmental destruction caused by flooding disasters, and reducing silting and shrinkage of Dongting Hu. It could increase the dry season flow on the Chang Jiang, which would help improve the water quality during the dry season in the middle and lower reaches. It would utilize hydropower resources to generate electricity, which could reduce discharges of pollutants compared to burning coal to generate power. Its main negative impacts are: inundation of cultivated land by the reservoir and resettling the population and moving and rebuilding cities and towns, which would exacerbate the contradiction between people and land, which is already extremely acute. Without careful handling it would inevitably exacerbate the destruction of vegetation and cause soil erosion and ecological degradation. There is already very serious pollution from

industrial and household waste water in the reservoir region and local sections of the river with cities along the river have already become rather severely polluted zones. After the reservoir is built, the flow velocity would be reduced and the reoxygenation and diffusion and dilution capabilities of water bodies would be reduced, which would increase water pollution. The project would change the structure and functions of the aquatic ecological system in the reservoir region and the middle and lower reaches of the Chang Jiang and further degrade the conditions of existence of several valuable and endangered species and have a negative impact to a certain degree on the breeding of four main types of domesticated fish. After the Three Gorges reservoir begins operation, it could cause silt accumulation in the reservoir tail which would hurt flood prevention. Scouring could occur in the river channel in the Jing Jiang segment. Soil gleysolization and waterlogging could become more acute in low-lying farmland in the middle reaches of the Chang Jiang and the plains lake region. The threat of seawater intrusion at the mouth of the river in the lower reaches could be increased. After the Three Gorges dam is built, the water surface in the reservoir region would be raised and broadened and some of the cultural relics and historical sites along the river could be submerged. There would be a considerable impact on the natural scenery of the Three Gorges. The Three Gorges project could cause silt accumulation and a decline in water quality in the river section at Chongqing City and the existing drainage facilities would be affected. The project would have definite impacts on the environmental geology, local climate, public health, and so on.

The scientific research personnel pointed out that it might also engender some latent ecological and environmental problems that are not understood. Thus, there must be continual tracking research.

They feel that the following measures should be adopted to deal with the environmental impact of the Three Gorges project: 1) Integrate overall development of the Three Gorges project, do good territorial planning in the reservoir region, include urban construction, resettlement projects, resource development, water quality protection, and environmental improvements in the overall plan, treat the reservoir region as a compound natural and social system, and formulate a comprehensive development program with economic benefits, social benefits, and environmental benefits. 2) Rationally arrange the deployment of industry around the reservoir region, select industries that do not pollute or cause little pollution of water quality and other ecological aspects, and ensure that the water quality in the reservoir region conforms to the category 2 standards in the "Groundwater Environmental Quality Standards". 3) Reinforce construction of shelter forest and water and soil protection regions in the area of the middle and upper reaches of the Chang Jiang to reduce soil erosion. In the reservoir region, use the land's bearing capacity as a basis for determining the size of the agricultural population that can be accommodated in the resettlement region, control

population growth, and adapt to local conditions to develop economic diversification for forestry, animal husbandry, sideline production, and fishery. It would not be appropriate to advocate the principle of self-sufficiency in grain to prevent further degradation of the ecology and environment due to overloading of the environment in local areas. 4) Strengthen protection of valuable and endangered species and nature. Formulate aquatic organism protection plans for the Chang Jiang, establish aquatic organism protection regions and base areas for breeding valuable and endangered species. Establish a Three Gorges natural protection region or national park, formulate the related regulations, and establish management organizations. 5) An independent examination should be made of the environmental protection sections in the preliminary design for the Three Gorges project. Environmental impact assessments should be carried out for key water conservancy facility construction, movement and construction of towns and cities, selection of sites for enterprises, arrangements for the resettled population, and so on in an effort to occupy less cultivated land, prevent destruction of the scenery, and avoid increasing pollution. 6) The Three Gorges project has a large scale and long construction schedule, and environmental protection during the construction period should be reinforced. Good programs should be prepared prior to construction. During construction, the various prevention measures stipulated in the environmental impact assessment report should be conscientiously implemented. After construction, any environmental damage should be immediately repaired. 7) Do more research on environmental impacts and prevention measures for the Three Gorges project, focus on a survey of existing pollution sources in the reservoir region, do good forecasting and analysis, propose reasonable control countermeasures, do immediate quantitative research on any problems inconsistent with present understandings and draw scientifically consistent conclusions as soon as possible. 8) Focus on surveys of cultural relics and historical sites in the reservoir region and on movement and excavation work. 9) Establish an ecological and environmental monitoring network system, do full-process tracking and monitoring of the ecology and environment in the middle and downstream reaches and at the mouth of the Chang Jiang before and after the reservoir is built and make immediate warnings and predictions. 10) The capital needed for environmental protection for the Three Gorges project should be listed separately in the overall project investment and all compensation investments for the negative ecological and environmental impacts listed in the "Report" should be implemented by item. A specific proportion of the income from power generation should be set aside to establish a Three Gorges environmental fund for use in ecological construction and environmental protection in the Three Gorges project. 11) Establish a Three Gorges project environmental protection management organization to guarantee the implementation of these measures.

Song Jian Urges Further Development of Environmental Sector

*OW2104062992 Beijing XINHUA in English
0552 GMT 21 Apr 92*

[Text] Beijing, April 21 (XINHUA)—In the next 10 years, the environmental protection industry will become one of the quickest development sectors in China.

Song Jian, state councillor and director of the Environmental Protection Committee under the State Council made the remark at a recent national working meeting of the environmental protection industry.

According to today's ECONOMIC DAILY, China suffers an economic loss of more than 90 billion yuan from environmental pollution each year.

As the environmental consciousness of the whole society is enhanced, the demand for improving environmental quality becomes ever more urgent, said Song, adding that the state has listed the environmental protection industry as one of the sectors to enjoy priority development and the input for the sector has been increasing.

According to him, during the Eighth Five-Year Plan period (1991- 95), the state investment for environmental protection will be 80 billion yuan, compared with 15 billion yuan during the Sixth Five-Year Plan period (1981-85).

Song urged the environmental protection sector to change its traditional development mode by adjusting production, strengthening environmental protection and construction and to help build a new economic and social setup which is in accordance with China's long-term interest.

To further develop the environmental protection sector, more efforts should be made to encourage the establishment of environmental protection enterprises of various ownerships, said Song.

He pointed out that special economic zones, local economic and technological development zones, and high-tech development zones should pay attention to raise the proportion of environmental protection enterprises.

At present, China has 2,500 enterprises and units engaged in the research, development, production and management of environmental protection technology, and these enterprises and units create 3.8 billion yuan in output value each year, according to the report.

Council on International Environmental Cooperation Set Up

Symbol of Government's Expanding International Role

OW2104104492 Beijing XINHUA in English
0959 GMT 21 Apr 92

[Text] Beijing, April 21 (XINHUA)—The China Council for International Cooperation on Environment and Development (CCICED) was set up here today.

The council, with financial support from the Canadian International Development Agency (CIDA), is to put forward suggestions on environment and development to the Chinese Government which is to use the proposals as references in decision making.

Meanwhile, the council is also responsible for attracting funds and technological assistance from foreign countries in order to realize the coordinated development of the Chinese environment and economy, sources said.

Established just weeks before the opening of the United Nations Conference on Environment and Development [UNCED], popularly called the "Earth Summit," the council is regarded as the latest symbol of the Chinese Government's efforts in expanding international cooperation in the environment and development.

Informed sources told XINHUA here today that China needs to cooperate with foreign countries in the fields of new energy exploration, prevention of soil erosion, research on substitutes for chloro-fluorocarbons (CFCs), and the protection of biodiversity.

Chinese Vice-Premier Wu Xueqian, speaking at the opening ceremony here today, said that China, in its development process in the past years, has got a better understanding on environmental issues, that is, in developing economy, natural resources must be properly tapped and the environment for human beings must be protected.

Wu stressed that doing a good job in China's environmental protection is in fact a contribution to the global environmental protection drive.

The council, whose establishment was ratified by the State Council, means that China wishes to open wider to the outside world in the field, Wu said, adding that the experiences and wisdom of all council members will be conducive to solving China's environmental problems.

Federico Mayor, director-general of the United Nations Educational, Scientific and Cultural Organization (UNESCO), said that taking place just weeks before the UNCED in Rio de Janeiro, this meeting is "particularly timely and auspicious."

The council members include Dr. Marcel Masse, CIDA's president, Kazuo Aichi, former Japanese environment minister, Barber Conable, former president of the World

Bank, and Martin Leese, former assistant secretary general of the U.N., and leading personnel from the World Wide Fund for Nature (WWF) and other non-governmental organizations, as well as a number of Chinese ministers and specialists.

Sources said the council will be divided into five special groups focusing respectively on energy strategy; monitoring, information collecting and pollution control; research and training; protection of biodiversity; environment and price policy.

On Thursday, when the council concludes its meeting, a formal proposal on China's environment and development will be handed to Chinese leaders.

China decided to set up this international council following the International Conference on Coordinated Development of the Chinese Economy and Environment in Beijing in October 1990.

Members Present 5-Point Plan for Environment, Development

OW2304142892 Beijing XINHUA in English
1412 GMT 23 Apr 92

[Text] Beijing, April 23 (XINHUA)—Members of the newly founded China Council for International Cooperation on the Environment and Development (CCICED) presented a five-point plan for China's environment and development today in Beijing.

The council of 22 prominent individuals from overseas and 23 Chinese ministers and experts was founded on Wednesday to serve as a venue for China's cooperation with the outside world concerning the environment and development.

State Councillor Song Jian, who also serves as chairman of the council, announced the following five-point plan:

- China should develop a new concept stipulating that environmental protection is not necessarily a burden on the country's economic development;
- China has the full potential to expand its present energy structure and energy exploration effort by adopting advanced and practical technology, which in turn will lower energy consumption;
- China should establish a macro-coordination and management mechanism for the environment and development;
- China should establish as soon as possible a resource pricing and accounting system covering environmental resources in order to take full advantage of its limited resources; and,
- China should try its best to realize the simultaneous development of rural environmental protection and rural economic prosperity.

Speaking at a news conference following the founding ceremony, Song said that while seeking foreign cooperation for environmental and economic development, China should rely mostly on its own efforts.

He said that the suggestions received from experts concerning the environment and development will first be revised by the council and then be forwarded to Chinese leaders and related ministries.

Song cited the "extreme wisdom, experience and influence" of the experts and noted that their advice on environmental issues will provide "reliable background information" to aid decision-making by the Chinese government.

According to informed sources, the council has established five special committees which will meet once each year to discuss the issue.

Environmental Monitoring Center To Be Established in Tibet

*OW3004084692 Beijing XINHUA in English
0830 GMT 30 Apr 92*

[Text] Lhasa, April 30 (XINHUA)—Shanghai will help to establish an environmental monitoring station in Xigaze in Tibet and the project will be started soon.

A Tibet autonomous regional government official said that the investment in the project approaches 1.5 million yuan and the construction area of the monitoring station will be 1,600 square meters.

The monitoring station will undertake the monitoring of the atmosphere, water, noise and ecology in Xigaze Prefecture. It is estimated that the whole project will be completed within this year.

The official said that environmental protection in Tibet developed rapidly in recent years. Due to the hard conditions in the area, support and aid from the developed areas in the country are needed.

An official in charge of the Shanghai Environmental Protection Bureau (SEPB) said that SEPB will install all the equipment for the Xigaze Monitoring Station and provide the instruments and equipment gratis.

He said that SEPB will also provide support in technology and worker training.

Mao Rubai, vice chairman of the Tibet Autonomous Region, said that the building of the Xigaze Environmental Protection Bureau embodies the concern and support of all the people in the country in the economic construction and social development of Tibet.

He said that Guangdong, Wuhan, Chengdu, Chongqing and the State Environmental Protection Bureau will invest some 1.5 million yuan to establish an environmental monitoring station in Qamdo Prefecture in July.

Scientists Predict Yellow River Disaster in 'Next Decade'

*HK3004041592 Beijing CHINA DAILY in English
30 Apr 92 p 1*

[By staff reporter Zhou Jie: "Scientists: Big Floods Are Likely in Next Decade"]

[Text] Chinese scientists are urging increased public attention to environmental protection as the only "long term prevention" against natural disasters.

In an ongoing eco-environmental forum in Beijing, the scientists said the Yellow River, second largest river in China, is a possible source of disaster causing great loss of life and property in the next decade.

"Severe droughts may take place along the 700,000 square-kilometre river valley in the next two or three years. Then from 1995 to 2000, the middle and lower reaches of the river may expect two serious floods, which will probably shatter the river bank and wash away villages, factories, railways and oil drilling stations," said associate professor Lu Zhongchen in an environmental forecast yesterday.

Lu, who is attached to the Research Centre for Eco-Environmental Sciences under the Chinese Academy of Sciences, has been involved in a State-assigned study to monitor the environment and forecast potential natural disasters.

"During the past two thousand years, the Yellow River changed its route about every 100 years. We are now in another period in which this is highly possible," Lu said.

"The river valley has been receiving more rainfall in recent years, which is likely to continue throughout this decade. We believe that there will be severe floods," he continued.

According to Lu and his colleagues, the possible flood may inundate some 22,000 square kilometres of land in central and eastern China with a population of 12 million, causing an economic loss of 32 billion yuan (\$5.8 billion).

The possible breakthrough in the river bank may be between Dongbatou and Sunkou in Central China's Henan Province. "The disaster seems inevitable even under the current protective measures," Lu said, explaining that the expected flood may bring at least two times more water than the river can support.

The scientists' analysis is based on available climate and river flow information from the past 500 years, as well as the movement of sunspots.

Following the major flood, scientists estimate, a large area of about 7,000 square kilometres in Central China may be turned into sandy soil.

"The flood will destroy Central China's agriculture, as well as the general ecological system," said the report.

Scientists suggest that plans for development of large industrial enterprises and other social and economic projects should avoid the predicted flood area.

REGIONAL AFFAIRS

Asian NGO Forum Vows To Establish 'Global Citizens' Network'

OW0305114692 Tokyo KYODO in English
1125 GMT 3 May 92

[Text] Yokohama, May 3 (KYODO)—Hundreds of environmentalists and scholars from the Asia-Pacific region ended three days of talks here Sunday with a vow to establish a global citizens' network to protect the environment.

"We must appeal to immediately stop large-scale projects which have been implemented out of national interests and have neglected the voices of women and indigenous people," participants said in a "Kanagawa Declaration." Delegates to the Asian NGO (Nongovernment Organizations) Forum on the global environment from civil groups and environmental parties as well as NGOs were meeting ahead of the Earth Summit in Brazil in June.

The declaration also called for an immediate end to deforestation of tropical rain forests and operations of nuclear power plants, and the imposition of a special tax on the import of raw materials in order to encourage recycling. The document also demands a swift end to "environmentally destructive" projects such as the proposed dams on the Narmada River in India and the Nagara River in Japan.

Singapore, Indonesia Agree on Joint Waste, Hazardous Substances Control

BK2304161292 Singapore THE STRAITS TIMES
in English 22 Apr 92 p 19

[Text] Singapore and Indonesia have agreed to jointly find a way to control the movement of waste and hazardous substances between the two countries.

This was one of the measures their environment officials agreed on at the close here yesterday of the first meeting of a bilateral government committee, the Indonesia-Singapore Joint Committee on the Environment (ISJCE).

Describing the joint undertaking, an Environment Ministry statement said that the mechanism should adopt the basic principles of the Basle Convention.

Among others, the convention states that a country generating toxic waste must take it back if it is found to have been transported illegally to another country.

"Through the mechanism, both countries would also look into the disposal of sludge from tanker cleansing activities," said the statement.

The meeting, which was opened by Environment Minister Dr. Ahmad Mattar on Monday, also agreed to form a working group to:

- Develop a concept plan on the management of solid wastes for the islands of Batam, Bintan and Karimun;
- Develop public education programmes to promote environmental awareness for urban areas in Indonesia; and
- Exchange experiences to help the implementation of Indonesia's spatial planning guidelines, especially for Batam, Bintan, and Karimun.

The committee identified Jakarta's Environment Impact Management Agency and the Singapore Environment Ministry's Pollution Control Department as the two agencies which will handle environmental issues discussed and implemented by the ISJCE.

The next ISJCE meeting will be held in Indonesia in October.

Beijing Agrees 'In Principle' to Nuclear Dumping by Taiwan

HK1504014892 Hong Kong THE STANDARD
in English 15 Apr p A-5

[By S L Law]

[Text] China has agreed in principle during recent talks to allow Taiwan to dump its nuclear waste in islands off the mainland's southeastern coast and the northwestern coast and the northwestern Xinjiang Autonomous Region.

But given that direct communications with the mainland are still illegal in Taipei, Beijing has maintained the disposal plan should proceed cautiously.

According to a China Nuclear Industry Corporation official responsible for international projects, China is interested in the project but is worried about the political sensitivity given that cross-strait direct communications are still illegal in Taiwan.

"Like the talks now going on between the two sides, we can only talk through civilian organisations," the corporation's international cooperation department head Jiang Xinduo said yesterday.

If the two sides do not talk directly it would be impossible to transport the nuclear waste safely from Taiwan for dumping in the mainland.

Taiwan's Radiation Protection Society, a civilian organisation representing the government's Atomic Energy Council, will talk to its mainland counterpart, the China Nuclear Society. It expressed optimism after a recent trip to the mainland.

The Taiwan Society chairman Tseng Te-lin said China basically agreed with the plan but believed the caution was necessary.

"They said high-radiation waste should be dumped in the northwestern Xinjiang region, while low-to medium-level waste should be dumped in suitable islands along the southeastern coast.

"They also added that the disposal plan should proceed step by step," Mr Tseng said.

Taiwan's Atomic Energy Council earlier reported China's approval of its plans to dispose nuclear waste in the islands off the mainland's southeastern coast and northwestern areas.

It said the islands near the Daya Bay Plant were a potential site.

However, an official from Taiwan's Atomic Energy Council said the mainland had retreated from its formal positive stance during the recent talks.

"China always showed a positive attitude, but political issues recently jeopardised the project's development," the official said.

JAPAN

White Paper Calls for Conservation of Rain Forests

OW1404030892 Tokyo KYODO in English
0206 GMT 14 Apr 92

[Text] Tokyo, April 14 (KYODO)—Japan should promote international efforts to conserve and replant tropical rain forests as the world's top importer of tropical timber, the government said in a white paper published Tuesday.

The annual white paper on forestry for fiscal 1991 was approved by the cabinet when it was presented by Agriculture, Forestry, and Fisheries Minister Masami Tanabu. The paper also called for stepped-up efforts to improve the social infrastructure, such as roads and sewers, in rural communities in a bid to stem a steady decrease in the number of forestry workers.

Noting that the number of forestry workers fell to 110,000 in 1990 from 440,000 in 1960, the paper said that if the present trend continues, it would become difficult to maintain the forestry industry. The shortage of forestry workers could affect government plans to shift from imports to local production of timber in 10 million hectares of man-made forest, which will be ready for logging at the beginning of the 21st century, the paper said.

It also said an efficient, integrated system covering the processes from logging to marketing should be established for nationally and privately owned forests. At the same time, the paper called for an increase in forestry production efficiency and an improvement in working conditions for industry workers through mechanization.

MITI Official Reacts Negatively to Environmental Tax

OW1704111092 Tokyo KYODO in English
1053 GMT 17 Apr 92

[Text] Tokyo, April 17 (KYODO)—A senior official of the Ministry of International Trade and Industry (MITI) reacted negatively Friday to the proposed creation of a special tax for environmental conservation.

"The people will not be convinced unless the government specifically decides what to do with the money raised from such a tax," said the official, who asked not to be named.

"It would be more natural to create funds under the framework of the existing tax system," he said, citing a hike in the 3-percent consumption tax as one possibility.

The MITI official's remarks came as the government is studying the possible introduction of a tax aimed at funding schemes to reduce carbon dioxide emissions, a major cause of global warming, and other environmental protection programs in developing countries.

Opposing an idea of taxing oil, coal and other products that directly or indirectly contribute to carbon dioxide emissions, the official said it would be bad for the affected industries.

Tokyo Declaration on Environment Receives Mixed Welcome

OW1704103992 Tokyo KYODO in English
1018 GMT 17 Apr 92

[Text] Tokyo, April 17 (KYODO)—Business leaders showed mixed reaction Friday to a decision by an international conference on the global environment to offer financial assistance for environmental conservation in developing nations.

"It is extremely significant in that it showed to the world Japan's positive stance concerning environmental problems," said Gaishi Hiraiwa, chairman of the powerful Federation of Economic Organizations (Keidanren).

Creation of an environmental tax to fund global nature preservation was incorporated in a "Tokyo Declaration" issued by the Eminent Persons' Meeting on Financing the Global Environment and Development in Tokyo Thursday.

Major business organizations, however, expressed opposition to increasing taxes on particular items, such as coal, oil, and natural gas.

Takeshi Nagano, president of the Japan Federation of Employers' Associations (Nikkeiren), said he is opposed to an idea of increasing taxes.

Rokuro Ishikawa, chairman of the Japan Chamber of Commerce and Industry, said it is desirable that the necessary funds be shared by the entire people, not particular industries.

Komatsu Ltd., a major construction machinery maker, proposed that tax incentives be given to manufacturers of energy-saving equipment.

Environment Committee Calls for End to Mass Consumption

*OW2404142392 Tokyo KYODO in English 1413 GMT
24 Apr 92*

[Text] Tokyo, April 24 (KYODO)—The world must shift from mass production and consumption to more environment-friendly systems, the body responsible for Japan's assistance to the June 3-14 Earth Summit in Brazil said in a statement Friday.

The Japanese committee on the global environment issued the statement in advance of the summit, formally known as the United Nations Conference on the Environment and Development.

The committee comprises government and private individuals and is headed by Gaishi Hiraiwa, chairman of the Federation of Economic Organizations (Keidanren).

The committee's statement said that integrating the two themes of environment and development will require an urgent strengthening of the United Nations and increased emphasis on population control.

It also recommended stepped-up international cooperation to increase safety measures in nuclear power production, as well as limiting developed countries' consumption of fossil fuels to prevent global warming.

The statement called on corporations to take account of the environment in all stages of production, distribution and technological development.

Nissan To Eliminate CFCs in Manufacturing Process

*OW2704112892 Tokyo KYODO in English 1059 GMT
27 Apr 92*

[Text] Tokyo, April 27 (KYODO)—Nissan Motor Co. said Monday it has halted the manufacturing use of chlorofluorocarbons (CFCs) in order to prevent further destruction of the earth's ozone layer.

Japan's No. 2 automaker said it has stopped using CFCs to clean automobile parts.

CFCs are used as refrigerants, cleaning solvents, and aerosol propellants and in the manufacture of plastic foams.

Nissan is the first Japanese automaker to announce the elimination of CFCs from its manufacturing process.

Several years ago, the firm used as much as 1,500 tons of CFCs annually but will be able to reduce the amount to around 1,000 tons through its latest move, Nissan officials said.

Regarding the use of CFCs as a refrigerant for its automobile air conditioners, the officials said the firm plans to use a substitute in all models by late 1994.

Feasibility Study on Asia-Pacific Gas Pipeline Initiated

*OW0105091092 Tokyo KYODO in English 0839 GMT
1 May 92*

[Text] Tokyo, May 1 (KYODO)—A group of Japanese experts have begun a feasibility study to build a natural gas pipeline that would stretch 27,000 kilometers from Sakhalin, Russia to the western part of Australia, a private research group said Friday.

The National Pipeline Research Society of Japan, headed by Masaru Hirata of Shibaura Institute of Technology, had devised the project to promote economic and technical cooperation among Asian-Pacific countries in the use of energy.

Last December, the society held a symposium in Japan which proposed development of a 3,300-kilometer natural gas pipeline from Hokkaido to Kyushu, as part of an "Asia and Pacific energy community project" advocated by Hirata.

The pipeline would cost an estimated 3 trillion yen.

The society will send Japanese technical experts to six countries in Asia, including South Korea, Thailand and Malaysia, from May 11, to hold talks on plans for the project, the research group said.

The envisaged pipeline would stretch from Sakhalin in Russia, along the eastern coast of China, to Malaysia and Indonesia, and connect with Australia.

Another pipeline would run from Sakhalin to Hokkaido in Japan, pass through the Japanese archipelago, and connect with Taiwan and Hong Kong.

A third pipeline connecting Hokkaido, the Kamchatka Peninsula and Alaska is still under study, the research group said.

The costs to build such a pipeline have been estimated at about 100 million yen per kilometer, but the project would expand demand for natural gas and contribute to preservation of the global environment, the group said.

Natural gas emits only about half the carbon dioxide given off by coal and about two-thirds of that released by oil in generating the same amount of energy.

SOUTH KOREA

Minister Proposes New Environment Office

SK2904084292 Seoul YONHAP in English 0708 GMT 29 Apr 92

[Text] Kuala Lumpur, April 29 (YONHAP)—South Korean Environment Minister Kwon I-hyok said Wednesday he would propose that the government form a special body in the prime minister's office to tackle environmental issues.

The special body would collect opinions and proposals from other ministries and governmental agencies and work out overall measures to help solve environmental questions, Kwon said.

Kwon revealed his plan after attending the second ministerial meeting of developing countries on environment and development here Wednesday.

Acknowledging that the Korean Government had been indifferent to environmental issues, Kwon said Korea planned to take an active part in the World Environmental Conference in Rio de Janeiro in June.

Kwon, who has also visited the United Nations Environment Projects (UNEP) in Kenya, said he recognized the importance of the world environment as it will affect Korea's economic and industrial development. Korea could not claim a legitimate place in the world community unless its government worked out a comprehensive and effective environmental policy, he said.

At the same time, Kwon expressed concern over the possibility that Korea might become a scapegoat among newly developing countries if it could not reflect its positions in various international restrictions for environmental protection.

Korea had to undertake "active environmental diplomacy" as it was hemmed in between advanced and developing countries, Kwon said.

Korea expected to join the Organization of Economic Cooperation and Development (OECD) in 1995 and therefore it could no longer keep asking for exemption from international restrictions for environmental protection, he said.

To cope with the restrictions, which would get tougher in the years to come, Kwon said, the country should foster the growth of the environmental industry and develop technology to eliminate various forms of pollution.

LAOS

Wild Elephants Slaughtered in Nakai Plateau Area

BK2904004592 Vientiane KPL in English 0929 GMT 28 Apr 92

[Text] Vientiane, April 28 (KPL)—The head of the state-run Mountainous Region Development Company

Gen. Cheng Sayavong, on April 22 issued a press release announcing the killing of some wild elephants in the central provinces of Khammouane and Bolikhamsai.

According to the release, between April 21-22, six armed men killed two wild elephants in the vicinity of Phou Ark mountain. The men, who were attacked by the local security force, left behind two pairs of elephant tusks. Rice, clothes and daily utensils and the dead body of a female elephant.

Mr. Cheng Sayavong further said that from March to the end of April, eight elephants were slaughtered, and counting from 1991, 38 wild elephants in Nakai Plateau of Khammouane Province were killed by bad armed men.

Mr. Khamouane Bouphe, first deputy minister of agriculture and forestry, recently said that now the Lao government has introduced some strict regulations vis-a-vis the slaughtering of wild elephants in Nakai Plateau. Likewise Prime Minister Khamtay Siphandon, while visiting Km 20 of Bolikhamsai Province, appealed to the general public to take part in protecting the wild life and environment.

According to an estimate, there are 300 wild elephants left in Nakai Plateau area.

Decree Suspends Timber Exports From All Provinces

BK0305102792 Vientiane Vitthayou Hengsat Radio Network in Lao 1400 GMT 30 Apr 92

[Text] On 20 April, the Ministry of Agriculture and Forestry issued an announcement to all provincial governors and the lord mayor of Vientiane Municipality on setting 30 May 1992 as the day for ceasing timber exports of all kinds from all localities for fiscal year 1991. The announcement reads:

Implementing Decree No. 67/N.Y. issued by the prime minister on 26 August 1991 on the cessation of timber exploitation throughout the country, the Ministry of Agriculture and Forestry issued Announcement No. 0007/P.P. dated 21 January 1992 to all provinces and services concerned for acknowledgement on timber exploitation, the setting up of factories, and the selling of timber to foreign countries. Recently, however, it has been noticed that the export of logs and processed timber claimed to have been the residual products of 1991 continues unabatedly in some provinces. Some export companies have [words indistinct] by submitting requests to the Ministry of Agriculture and Forestry and the Ministry of Trade and Tourism continued to export timber to other countries. However, many other companies in some provinces have not paid this any attention.

To avoid illegal operations and violations of the Prime Minister's Decree No. 67/N.Y., the Ministry of Agriculture and Forestry, in consultation of the Ministry of Trade and Tourism, would like to inform all provinces

that 30 May 1992 has been set as the last day for exporting all kinds of timber by all localities. All wood processing factories in all provinces will henceforth have only the right to process timber from logs felled with approval of the Ministry of Agriculture and Forestry. These logs come from forests which have already been officially surveyed and classified for its economic viability to be turned into products for use only within the respective provinces. As for the future export of timber, only the center, such as the Ministry of Agriculture and Forestry, with the collaboration of the Ministry of Economy, Planning, and Finance and the Ministry of Trade and Tourism, have the sole right to carry out this business.

Therefore, the administrations of all provinces and Vientiane Municipality and all services concerned are hereby notified of this announcement for strict implementation.

MALAYSIA

Mahathir Proposes Earth Greening Targets

BK2704134192 Kuala Lumpur BERNAMA in English
0710 GMT 27 Apr 92

[Text] Kuala Lumpur, April 27 (OANA-BERNAMA)—Malaysia has proposed to the world a comprehensive program for the greening of one third of the earth's terrestrial area and it announced that the country itself will ensure that at least 50 percent of its land will remain permanently under forest cover.

Prime Minister Dr. Mahathir Mohamed, in unveiling the proposal Monday, also called for the establishment of a global fund to support the global greening target.

Detailing the Malaysian proposal, he said as a first step the global community could target at least 30 percent of the earth's terrestrial area to be greened by the year 2000.

"The world now has 27.6 percent of its land under forest cover and we need only increase this by 2.4 percent over the next eight years," he said when opening the second ministerial conference of developing countries on environment and development here.

Environment ministers and senior officials from 54 developing countries, observers from 11 developed nations and representatives of eight international organizations are attending the three-day conference.

The meeting is for the developing countries to work out a common stand to be taken at the earth summit or United Nations Conference On Environment and Development (UNCED) in Rio De Janeiro in June.

Dr. Mahathir said the target Malaysia was proposing was not unreasonable.

He added "all nations must set national greening targets and those which have no suitable land must contribute adequate funds to developing countries with available land.

"The north, in particular, should not find this difficult because it has the funds, the technology, and the resources."

He said the north could divert the subsidies for their inefficient farms towards a massive reafforestation of these farm lands instead.

Mahathir Urges Acceptance of Tropical Timber Competition

BK2704135992 Kuala Lumpur BERNAMA in English
0852 GMT 27 Apr 92

[Text] Kuala Lumpur, April 27 (OANA-BERNAMA)—Malaysian Prime Minister Dr. Mahathir Mohamed Monday told the promoters of temperate timber to accept the competition posed by tropical timber and stop making an issue of the Penans community in the state of Sarawak.

"Promote temperate timber if you must but accept competition by tropical timber," he said at the opening of the second ministerial conference of developing countries on environment and development here.

"You advocate open markets and free trade. Now live up to your own creed," he said, referring to the developed nations where an anti-tropical timber campaign is being widely waged.

He said the arm twisting must stop and the tendency to link trade and aid to developing countries with environmental issues must also cease.

The prime minister said that when the anti-tropical timber campaign did not attract sufficient attention, its promoters needed to add a human face to it.

He added "The anti-tropical timber activists see in the Penans an opportunity to put a human face to their campaign for temperate timber.

"And so, the gentle Penans are urged to be militant, to protest, to erect blockades and defy the authorities."

He said the Penans are a gentle, law-abiding people numbering about 10,000 in the state of Sarawak who were originally shifting cultivators and hunters.

Certain anti-tropical timber activists have been campaigning for a halt in logging activities in Sarawak purportedly to save the Penans from "extinction."

THAILAND

Ban on Sale of Leaded Gas Endorsed

92WN0407A Bangkok BANGKOK POST in English
7 Mar 92 p 3

[Text] A ban on the sale of all kinds of leaded petrol in Thailand in four years was endorsed yesterday by the National Energy Policy Committee [NEPC], chaired by the Prime Minister.

Committee members believe ongoing measures to limit pollution from car exhausts is not sufficient to ensure cleaner air, National Energy Policy Office director Piyasawat Amaranan said yesterday.

But the target date of 1 January 1996 is not yet definite as further consultation with oil companies, especially local oil refiners, is needed to determine whether the ruling is practical, he said.

He did not explain how the Government will tackle problems arising from the fact that millions of cars requiring leaded fuel are in use.

But Dr. Piyasawat detailed the NEPC-approved plan to toughen specifications to make fuel sold in the next several years less polluting.

For petrol, oil companies would be required to add "oxigenate compound" to help cut the volume of carbon monoxide from exhausts. The permissible content of aromatics and benzene—a cancer causing substance—in petrol will be reduced.

The aromatics level will be cut from 50 percent to 35 percent in eight years and benzene from 5 percent to 3 percent in three years.

Quality specifications for diesel oil will be toughened. The allowable sulphur content in diesel oil will be halved from 0.5 percent to 0.25 percent in the next four years and further to 0.05 percent in the year 2000.

The distillation temperature of diesel oil will be reduced from 357 degrees celsius to 338 degrees, which will reduce black smoke and hydrocarbon emissions.

Dr. Piyasawat did not say if the next government will continue the cleaner-fuel policy endorsed by the NEPC. But the policy now will serve as a basic guideline for oil companies and refiners to prepare for what is to come.

During its year in office, the Anand administration has brought in several measures to introduce less-polluting fuel. Unleaded petrol was made available for the first time and at lower prices than leaded petrol.

Meanwhile, the permissible lead content in ordinary petrol was trimmed from 0.4 grammes per litre to 0.15 in January.

The maximum sulphur content in diesel oil was halved from 1 percent and the distillation temperature requirement was reduced from 370 degrees celsius to 357.

VIETNAM

Directive Bans Special-Purpose Forest Exploitation

BK2904120592 Hanoi Voice of Vietnam Network in Vietnamese 1100 GMT 24 Apr 92

[Text] To implement Directive 90 of the chairman of the Council of Ministers on urgent measures to stop forest destruction and the law on forest protection and development, the minister of forestry just issued a resolution to terminate the exploitation of special purpose forests, to protect forests, and to limit the exploitation of timber in the country.

The resolution strictly bans the exploitation of 86 special purpose forests, including the national reservation forests of Muong Ne, Muong Trang in Lai Chau; Vap Co, Han Kia in Hoa Binh; Nui Ba, Thuong Da Nhim in Lam Dong; Ben En in Thanh Hoa; Vu Quan in Ha Tinh; and Cu Lao Cham in Quang Nam-Da Nang. The ban also applies to the historical and cultural forests in Bai Chay of Quang Ninh, Tam Dao and De Dung of Vinh Phu, Deo Ca and La Xon of Phu Yen; bird habitats in Minh Hai; national parks in Cuc Phuong and Ba Vi; and so forth.

The minister of forestry's resolution also terminates the exploitation of 34 protected forests in northern mountainous provinces, the Central Highlands, U Minh, and coastal areas in Kien Giang. It also limits the exploitation of timber in the country. In 1992, the resolution only allows the exploitation of 638,800 square meters of timber, including the timber exploited in national forests and planting forests.

REGIONAL AFFAIRS

Experts Agree on Monitoring of Atmosphere in Black Triangle

LD1304104692 Prague Stanice Ceskoslovensko Radio Network in Czech 0700 GMT 13 Apr 92

[Text] Germany—Experts from Germany, Czechoslovakia, Poland, and the EC have agreed on international monitoring of the atmosphere in the Black Triangle. This area includes the Chemnitz and Dresden regions in Saxony, the industrial districts of Sokolov, Chomutov, Most, Usti nad Labem, Liberec, and Trutnov [in northern Bohemia], and the Polish voivodships of Jelenia Gora and Walbrzych. The Saxon Ministry of Environment Protection announced today that the first step to be taken will be the interlinking of the existing and planned monitoring systems in Germany, Czechoslovakia, and Poland. By interlinking the monitoring centers conditions for forecasting smog intensity in the regions concerned will be created.

ALBANIA

Elbasan Industrial Pollution Examined

AU1404103392 Tirana ZERI I RINISE in Albanian 8 Apr 92 pp 1-2

[Anton Joro article: "Is Albania Polluted?"]

[Text] Now that we are in political fever, journalists will find that answers to this question are as rare as hen's teeth. I will remind people who think in this superficial way that this problem involves the health of the people who voted for the parties, and is not a distraction of their attention. I would also remind them of President Bush's master stroke in his last presidential campaign, when he trumped Michael Dukakis, his strong opponent from Massachusetts, by paying a visit to the port of Boston, then one of the most polluted in the United States. If Dukakis cannot clean up the harbor of his own home town, Mr. Bush said, how can he clean up the entire United States?

Some might well ask whether Albania really has the major pollution problems to justify such an article. They are not to blame for their ignorance: Two years ago, it was absolutely taboo to talk about industrial pollution. Now that the taboos have fallen, it is politics that stops us looking after our health.

Nevertheless, I will raise the question by quoting the conclusion of some Albanian and foreign environmental specialists: "Albania is one of the least polluted countries of Europe. This is not because of an effective state environmental policy but because of the low level of Albanian industrial development. Nevertheless, Albania has its black spots where pollution is a danger to people's health and where vegetation and water are subjected to a disruption of the ecological balance."

Let us use the language of facts and mainly discuss Elbasan, which presents an acute problem. The Steel of the Party Combine was quite wrongly built in a valley. During the summer, when there is no wind, the smoke and emitted gases float in the air and damage the health of the inhabitants of the surrounding villages and the local vegetation. When the wind blows, it may carry the smoke to a distance of 15 kilometers, while the town of Elbasan is only five kilometers from the combine. Sheets hung out to dry in Elbasan often turn red. People in Elbasan complain of itching skin, said BBC correspondent Nicola Carslow in one of her reports. A group of German specialists that came to Elbasan to help restructure the combine refused to sleep in the town. They would not sleep even in lovely Belsh. They preferred to travel from Tirana each day. Why?

The coking plant, Factory No. 12, the factory processing raw materials for the blast furnace, and the power station all emit a range of poisons such as carbon monoxide, phenol, cyanics, ammonias, and dust-bearing gases and water. The now half-dead River Shkumbin is full of cyanics and ammonias that do not decompose because there is no processing plant. The blast furnace emits poisonous sulfurous gas.

Pollution exceeds permitted levels several times over. For instance, there is treble the permitted 20 milligram level of carbon monoxide, treble the permitted 20 milligram level of sulfuric gas, and five, 10, or 15 times the permitted 15 milligram level of total dust.

The filtering equipment at the Elbasan Steel Combine does not work at all. There are no funds to repair it, let alone to buy new equipment. There is not even any equipment to measure atmospheric pollution and to draw up a district or nationwide health policy on the basis of the resulting measurements. What are the results of this appalling pollution at Elbasan?

Workers have been poisoned by carbon monoxide, especially in the coking plant. They have often been hospitalized or temporarily laid off work. There have also been cases of chronic phenol poisoning among workers. X-ray examinations show lung diseases among those working in places with poisonous gases. Most workers complain generally of debility, headaches, and drowsiness. Many of them say that they do not have enough time to refresh themselves for the following day's work, even if they spend the entire time asleep. In Elbasan, they still remember how quite a large number of workers were hospitalized two years ago. The number of those suffering from cancer has also increased.

These problems have existed in Elbasan ever since this death-dealing mammoth was built by our Chinese "brothers" in the seventies. What was the response at that time to the great pollution it caused? Two cases will suffice to show. First of all, in 1973 nobody in the government was sufficiently interested to introduce equipment to measure pollution. Second, when Shaban Kamberi, then an engineer at the combine, wrote a

technical pamphlet about the danger of pollution and the measures that workers themselves should take for their own protection, the then party secretary said that this was enough to bring Mr. Kamberi before the courts for encouraging workers to abandon their jobs.

What is being done today to alleviate the situation? I have not heard anyone at rallies, party consultations, government meetings, and seminars mention any project to mitigate the effects of pollution at Elbasan, Vlore, Lac, Rubik, Kukes, or anywhere else. Politics has swallowed up everything. Can it blow away the smog from Albania's environmental black spots?

The country has taken its first steps toward a market economy. Specialists often say that a market economy is not good at alleviating and eliminating pollution. Will we go on like this? For a more accurate picture of how we can and should solve the problem of atmospheric pollution in the future, I will quote the specialist Shaban Kamberi, now deputy chairman of the National Environmental Protection Committee under the Council of Ministers:

"The new changes toward the market economy also imply the standards and criteria enforced by the most developed countries. If we are to have a healthy ecological future, the important thing is to introduce up-to-date technology at a low cost. This will start with the training of different kinds of specialists at university. What is most important is to integrate the environmental factor in plans for the country's development. The environment cannot be clean if economic development does not include measures for environmental protection. Before an industrial plant is built in a certain place, the agreement of the local people must be obtained. The principle: 'Whoever pollutes, pays,' must always be borne in mind and enforced."

BULGARIA

Zhelev Signs UN Pledge To Protect Planet Earth

AU2704134192 Sofia DEMOKRATSIYA in Bulgarian
23 Apr 92 p 1

[Text] BTA—"I swear to act with all my strength to help the earth to become a more secure and comfortable home for present and future generations." President of the Republic Dr. Zhelyu Zhelev pronounced these solemn words on 22 April, the day declared by the United Nations as International Day of the Earth.

Dr. Zhelev signed the pledge to defend the earth that was sent to him by the UN Environment and Development conference. As is known, this conference is due to take place from 3 to 12 June in Rio Janeiro. The idea of the pledge is to attract more government leaders and nongovernmental organization to join the world campaign to preserve the planet. At the forthcoming meeting, the

statesmen want to encourage people from all over the world in their struggle for mankind's survival and development.

It is also planned to invite nongovernmental ecological organizations and other interested institutions in Bulgaria to take this pledge. The Ministry of Environment will coordinate this action.

CZECHOSLOVAKIA

Slovak Government Approves Nuclear Plant Reconstruction

LD2504154292 Prague CSTK in English 2020 GMT
23 Apr 92

[Text] Bratislava April 22 (CSTK)—The Slovak Government has approved a project for a fundamental reconstruction of a nuclear power plant in west Slovakia, in keeping with measures set by Czechoslovakia's Atomic Energy Commission as a condition for the plant to continue functioning after 1995.

After hearing a report on the results of an analysis of the work of the nuclear power plant, the government agreed Wednesday to the drafting of a study which will envisage the plant's conversion into one working on a steam-gas basis.

The measures set by the Czechoslovak Atomic Energy Commission concern the plant's equipment, strengthening of its resistance to fires and seismic tremors, processing of radioactive waste and safety regulations.

The Slovak Government also consented to a loan from the European Bank for Reconstruction and Development (EBRD), totalling 1,100 million deutsche marks, which will be used to complete the construction of the nuclear power plant at Mochovce, west Slovakia.

HUNGARY

Government Plans To Reduce Carbon Dioxide Emissions

LD2104151892 Budapest MTI in English 1311 GMT
21 Apr 92

[Text] Budapest, April 21 (MTI)—By the turn of the century, Hungary will reduce carbon dioxide emission to the 1985-87 level, plant forests on 150,000 hectares, and limit the emission of gases that damage the ozone layer. With these decisions, passed last week, Hungary joined the similar EC and European Free Trade Association (EFTA) initiatives.

Carbon dioxide is believed to be responsible for 50 percent of the greenhouse effect. In the early 1980s, due to a larger production output, carbon dioxide emission from industries was about 90 million tonnes annually. By 1990, that number dropped to 75 million tonnes.

Per capita energy consumption and carbon dioxide emission from energy production in Hungary are lower than in industrialized countries of similar climates. Hungary, however, uses 3-4 times more energy to produce a unit of the GDP than industrialized countries.

Energy consumption and carbon dioxide emission, therefore, can be reduced by using production methods consuming less energy and modernizing production structure.

Planting forests is also expected to cut the carbon dioxide content in the air. The government has said it intends to forest 150,000 hectares by the year 2000, and one million hectares in the long term. The future one million hectare forest will absorb 5-10 million tonnes of carbon dioxide annually. Currently, over 1.5 million hectares of Hungary is covered with forests.

ROMANIA

Environment Minister To Run for President

AU2104183092 Bucharest ROMPRES in English
1634 GMT 21 Apr 92

[Text] Bucharest, 21/4/1992 (ROMPRESS)—The Timisoara branch of the Romanian Ecological Movement announces that at the Romanian Ecological Movement Congress over May 2-3, 1992 it "will propose and back an ecological alternative to the country's Presidency represented by Professor Marcian Bleahu, currently Minister of the Environment." In conclusion, the document sent by fax to the ROMPRES news agency demands "the other branches in the country and the other ecological and political or apolitical formations to support the alternative."

President Iliescu Reviews Black Sea Cooperation Efforts

AU2104163592 Bucharest ROMPRES in English
1419 GMT 21 Apr 92

[Text] Bucharest ROMPRES, 21/4/1992—After wishing success to the conference on signing a convention to protect the Black Sea against pollution, Romania's President Ion Iliescu said: The conference aims at laying legal bases for an ever closer cooperation among the Black Sea countries and between them and the pertinent international bodies in taking the due steps toward protecting sea environment and conserving the live resources of the Black Sea.

As I have recently underlined at the Athens seminar, the Black Sea has always been an area of confluence of great civilizations, exerting even now its influence on Europe, the Near East and Asia. For centuries, for millennia even, the Black Sea has not separated, but it has linked nations, peoples that have cooperated in view of peace and security. Certainly, it is also an important natural environment, on which the Black Sea countries' economies are based. The greatest impact on this sea is given

by the Danube River, which crosses or borders the territories of many European countries, the natural interference of which in the ecological geography of the Black Sea is doubled by the influence of the human factor: Crossing virtually the whole Europe, the river collects the polluted waters of the large cities it traverses, of the highly pollutant industrial units, the chemicals used in agriculture and washed away by rains, which are then all discharged into the Black Sea.

Therefore, these are factors which we must take into account in our attempt to make the cooperation among the countries in this region lawful, in the concerted efforts toward improving the Black Sea environment.

We think that such cooperation ventures have been initiated at the right time. The project "Cooperation in the Black Sea", launched this year in February, is apt to help develop economic activities round and on the Black Sea in the years to come, then the opening in near future of the Rhine-Main-Danube shipping system, wherein the Danube-Black Sea canal is only one of these objectives. In the efforts to develop economic activities and many sided cooperation among our countries, we should take into account the ecological component, the protection of the quality of water in the area, questions of mutual concern to all neighbouring states.

Concluding his address, President Iliescu stressed that Romania was about to complete a major stage in its history opened at December 22, 1989, namely that of building the legal institutions of the state of law.

We think that this conference is to provide new opportunities for cooperation with our neighbour countries, including the ones participating in the regional projects of the Black Sea, the Balkans, or the Danube basin. I express my belief that the governments of your countries and the international bodies you represent are determined to pursue the same aims as we do, for the mutual benefit of our people and of Europe as a whole, said President Iliescu.

Ecological Movement Holds Congress; Moldovans Attend

AU0305174592 Bucharest ROMPRES in English
1613 GMT 3 May 92

[Text] Bucharest, (ROMPRES) 3/5/1992—The congress of the Ecology Movement of Romania (MER) started in Bucharest on Sunday, May 5. During the first session Toma George Maiorescu, MER leader, read the report "Ecology and Politics." He stressed that the MER activity was set on two doctrinary concepts: That of "ecologic opposition" which does not mean to deny but to solve pending problems, and a positional concept of dynamic equilibrium translated into fact through a policy of equidistance from all democratic political groups on the one hand and through a rejection of all forms of extremism on the other hand.

The report sets forth the political initiatives backed by the MER on a national and international plane.

Attending the MER congress as an invited guest is the president of the Ecology Party of the Republic of Moldova Gheorghe Malaciuc who stated he was "neither a guest, nor an observer, as he represents the ecology organization in the east of the country." The delegates to the congress voted for the representatives of the Ecology Party of the Republic of Moldova to have the right to vote. Also read was the co-report "Political-Economic Circumstances."

YUGOSLAVIA

Safety of Krsko Nuclear Power Plant Questioned

*LD2504120792 Zagreb Radio Croatia Network
in Serbo-Croatian 1300 GMT 24 Apr 92*

[Text] The safety of the Krsko nuclear plant and its impact on the environment in the first quarter of this year have complied with the approved standards. However, there was a somewhat greater warming of the river Sava than in the previous period, as well as a slightly higher emission of radioactive tritium. Josip Aralica, assistant director of the nuclear plant, told a news conference today in the Croatian Ministry of Power and

Industry that this is normal, considering that it is the end of the fuel cycle before the maintenance work which is due to start on 30 April.

Here is a report by Silva Celebrin Tevsic.

Journalists' attention at today's news conference centered on the latest claims of the Slovene side concerning the safety of the joint nuclear plant. A Slovene parliamentary commission published the results of an investigation which said that the plant was built without the necessary documentation. There are also a number of irregularities: an unsuitable location was chosen; inferior building materials were used; construction work was below standard; and records were falsified.

The Slovenes claim the plant was built because of political pressure from the nuclear lobby, which was very strong at that time. Josip Aralica agreed that these are serious accusations, and said that the nuclear plant has a detailed documentation, and that everything is in accordance with present laws. He added that the project has been approved.

Ivo Valcic, head of nuclear safety in the ministry, said they have not received the official report of the commission, and that for the moment there is no reason to doubt the safety of the plant. They will be able to present their standpoint after a thorough analysis of the arguments presented by the Slovene commission.

ARGENTINA

Newly Released Forestry Plan Calls for 'Intensive' Efforts

92WN0433A Buenos Aires CLARIN in Spanish
22 Mar 92 p 46

[Text] According to the Office of Forestry Resources, by the year 2025 all of the country's natural forests will have disappeared if a program of intensive forestation is not put into effect. As it released the Argentine Forestry Plan, the agency noted that by 1986 the area covered by native forests had been reduced to one-third of the 1914 total and that actual plantings fell 1 million hectares short of plans for forestation in the last two decades.

Argentina's natural forests will disappear within three decades if an intensive and sustained program of forestation is not begun immediately. This was predicted by the Office of Forestry Resources of the Undersecretariat of Natural Resources, which comes under the jurisdiction of the Office of the President. Yesterday, on World Forestry Day, it released the Argentine Forestry Plan.

According to Food and Agriculture Organization estimates for the southern hemisphere, productive forests will have been reduced to one-half by the year 2000, the tropical jungles will have been lost by 2018, and all forests will have disappeared by 2025.

The Office of Forestry Resources claims that deforestation is threatening to follow the same pattern in our country, since the area covered by native forest was reduced to one-third between 1914 and 1986, and it is estimated that there will be no forest left at all by 2025 or 2028.

The office also notes that "with regard to the projects planned for the 1970's, we built up a shortfall of nearly 1 million hectares of land that was planned for forestation and never planted. Between 1978 and 1989 some 300,000 hectares were planted in trees, while nearly 1,200,000 hectares were slated for forestation—just to guarantee self-sufficiency in cellulose—and were never planted.

Reduction of National Forests

Total for Argentine Republic

Year	Millions of Hectares
1914	100
1956	58
1986	38
2025-2028	Point of extinction

Source: Office of Forestry Resources

Forestry Resources makes no secret of the ecological consequences of indiscriminate cutting without replanting:

- Increased air pollution, primarily with gases involved in the greenhouse effect;
- Uncontrollable floods and droughts, increased rate of desertification;
- More erosion;
- Significant reduction in river flows and water tables;
- Loss of gene pools, reducing biodiversity;
- Destruction of the balance of the forestry ecosystem, altering the prevailing ecological system.

Without going into detail with regard to increased poverty and rural unemployment, the economic consequences are no less serious. Official calculations point to not only higher import costs, but also lost export income over the next 20 years, amounting to more than \$30 billion.

Protection and Growth

The Office of Forestry Resources (which does not come under the Secretariat of the Environment, led by Maria Julia Alsogaray), plans to implement the Argentine Forestry Plan, which covers several decades (with short-, medium-, and long-term objectives). The plan calls for the appropriate regionalization, and contemplates the participation of all affected sectors, both public and private.

The project is designed to be an instrument that will organize forestry resources and at the same time organize all renewable natural resources, with a view to combining environmental protection and restoration with socioeconomic development.

For this reason, one of the plan's goals is to "allocate soil uses appropriately for agriculture, livestock, and/or forestry," ensuring the maintenance of biological potential and productive capacity. In this regard, officials note that deforestation often comes about as a result of three factors: rural poverty, the poor allocation of soil use (migrant agriculture and the expansion of grazing), and the excessive and irrational cutting of timber for firewood.

Consensual Project

Obviously, the Forestry Plan is also designed to consolidate our self-sufficiency in lumber and forestry products, to help improve and develop industries in this sector, and to boost Argentina's share of the international market significantly. Indirectly, it also seeks to create socioeconomic conditions that will prevent the exodus of the rural population.

The following elements will be emphasized in the execution of the plan:

- Integrated management of forestry ecosystem;
- Increased investment, promotion, and incentives for private initiative;
- Development of forestry research and experimentation and training of personnel;
- Promotion of environmental education;

- Dissemination of the plan, especially in the rural sphere.

And above all, the project will be submitted to the political parties for their approval, in order to ensure continuity.

CHILE

Economy Minister Warns OAS Meeting on 'Bad Use' of Environmental Issue

PY2204231892 Madrid EFE in Spanish 1418 GMT 121 Apr 91.

[Text] Santiago, 21 Apr (EFE)—Chilean Economy Minister Carlos Ominami has warned about the "bad use" of the planet's environmental issue. The minister addressed the subject in a speech at a meeting on international trade and environment, which is being sponsored by the OAS and which will end here today.

The meeting, which is being attended by experts and government representatives of the 34 OAS countries, is being sponsored by the OAS with a view toward the upcoming UN Conference on Environment and Development, which is due to be held in Rio de Janeiro in June.

According to the Chilean minister, there are clear indications that there is an attempt to use the legitimate concern about the environment for protectionist purposes, and—in some cases—even for the purpose of fomenting technological dependence.

At this two-day meeting, the OAS is trying to agree on a regional strategy to make foreign trade compatible with sustained development and to permit OAS members to adopt a common position in the face of new factors, especially now that possible "environmental 'dumping'" [preceding word in English] or "unfair competition" is being mentioned in some regions of the world.

In referring to foreign trade and sustained development, Ominami said: "Any sensible proposal regarding the environment should explain how an absolutely valid, legitimate, and pertinent concern can be used for either commercial or technological purposes."

Ominami made an appeal to all the region's countries to bear the environment in mind in their development plans, but, simultaneously, "to strongly oppose the bad use of the environmental issue," which has gained force lately, especially in the developed countries.

The minister recalled that the national regulations of these countries and the implementation of certain environmental requirements many times seek to induce certain behaviors in the technological field "associated with the technology offered by the very countries imposing the restrictions."

Ominami labelled as completely "unacceptable" the position of certain circles of industrialized countries

that, alarmed by the damage caused to the planet's environment, "some way or another seek to place all the blame on developing countries."

The Chilean minister urged the developed countries "to share an equal responsibility for the damage they caused the environment in the past."

Ominami recalled that Latin America has been subject to several types of restrictions, such as the foreign debt or macro-economic adjustments, and, therefore, must not tolerate further conditions.

The minister then noted: "There is no doubt that the only chance of solving our problems lies in our capacity to guarantee a high level of and sustained growth over the years, therefore, the subject of the environment cannot be regarded as a new restriction."

Ominami said that Chile will accept discretionary restrictions on its foreign trade "only if they affect final products and not the production process" and as long as those restrictions are in keeping "with acceptable international regulations."

Ominami, who also said he was against including environmental costs in the production, said that "the way to protect ourselves from the bad use is to avoid the proliferation of national regulations."

He added that the homogenization of the costs is subject to the resolution of the most serious global environment problems our planet is suffering.

Among these problems, he mentioned the thinning of the ozone layer and the change of climate, among others, whose solution is difficult but a priority issue.

Aylwin Opens FAO Environmental Policies Forum

PY2804204892 Santiago Radio Chilena Network in Spanish 1700 GMT 28 Apr 92

[Report by Carlos Humberto Silva]

[Text] President of the Republic Patricio Aylwin has said that defeating misery represents a great challenge for Latin American nations. He asked national leaders and entrepreneurs to equitably use natural resources, adding that the end results should not be a privilege or a booty for the strong at the expense of the weak.

This morning he went to the old congress building to inaugurate a forum sponsored by the FAO [UN Food and Agriculture Organization] on development and the environment within agriculture, forestry and fishing in Latin America and the Caribbean.

FAO Deputy Director Rafael Moreno, Agriculture Minister Juan Agustin Figueroa and other Latin American and Caribbean ministers of state attended. Aylwin

stressed there will be no democratic stability, full exercise of human rights, or peaceful coexistence unless we are capable of defeating the problem of misery. He said:

[Begin recording, in progress] ... necessary that the end results of that effort be equitably shared or distributed among everyone. End results should not be a privilege or a booty for the most audacious or those who have most. They should be shared by all those participating in this effort [words indistinct] special concern for the weakest. [end recording]

Aylwin then emphasized that the states must not give up their role of administering common good and defending the poorest, adding that Chile tries to reconcile democracy, economic development and social equality. With realism and idealism, he said, we are trying to promote this project because it seeks to enhance coexistence for our people.

COLOMBIA

Riverine Pollution From Detergents Assessed

92WN0410A Santa Fe de Bogota EL TIEMPO
in Spanish 15 Mar 92 p 1F

[Report by Miguel Marcial Castro]

[Text] Water runs as a pair of hands rubs a pair of pants clean. The soapy liquid drains slowly through the hundreds of pipes making up the 4,500 km of Bogota's sewage system.

Under the city the detergent residue is agitated as it mixes with the 16 tons of liquid wastes produced every second of the day.

Pouring from a pipe outlet (which ranges from six inches to 2.5 meters in diameter), the stream of liquid wastes joins the slow current of the Bogota River and sluggishly moves through the Savannah area. The only waste water treatment plant of the EAAB [Bogota Water and Sewage Enterprise] operates at El Salitre Experimental Center. Its name indicates the use made of it.

When it reaches the vicinity of Tequendame Falls the river awakens, the turbulence begins, and the scum on the surface increases until it falls almost 100 meters mingled with the waterfall's fine spray. Three days later it joins with the Magdalena River—that is how long it takes on the average—and is then diluted in the sea.

To a greater or lesser degree, this process takes place in Colombia's large, medium, and small cities whenever laundry detergents are used. In Barranquilla, the Magdalena receives totally untreated waste water from about 1.5 million city residents. In Cauca del Valle Department, the section of the Cauca River located between the cities of Cali and Zarzal has the highest pollution level in the department. According to studies

by the Environmental Research and Protection Foundation, polluted discharges dumped into the river in this area require 70,000 kg of oxygen a day.

Even though the foam seen in some sections of these rivers is an indicator of pollution, it is not a serious problem. "It is more a matter of visual pollution," says Guillermo Sarmiento, head of the EAAB's Industrial Effluents Division. "It can be skimmed off very quickly." And when the waters calm down, it disappears relatively rapidly.

The problem is that detergent compounds accumulate on the water surface and prevent oxygen exchange between the air and water. "In some parts of the Bogota River," says Sarmiento, "we have made oxygen measurements of only 0.1 ppm (parts per million). An ideal state is 4.0 ppm. It is disturbing when you find between 2.0 and 2.5 ppm."

"Accumulation" means the 140,000 tons of laundry soap, 90,000 tons of powdered detergent, 10,000 tons of liquid detergent, and 18,000 tons of bath soap produced in Colombia each year. According to a University of the Andes study contracted by Ecopetrol [Colombian Petroleum Enterprise], Andi [National Association of Industrialists] and the National Association of Soap and Detergent Producers, 40 percent of these materials are used in Bogota.

Does this mean that the detergent and soap industries are filling the rivers with wastes? The Andes study found that is not so. "In the Bogota River toxic concentrations are fairly low, indicating reduced levels of industrial type chemical pollutants."

Still, this does not mean that industrial pollutants are not an important factor in pollution. According to the Andes report, "estimates made a few years ago for the city of Bogota suggest that industrial pollutants account for half the pollution associated with sanitation wastes."

According to an Ecopetrol official who requested anonymity: "There is major pollution from organic matter. Soaps are a tiny part of the problem."

When there are large amounts of organic matter, the oxygen consumed by microorganisms present in the water increases. At the same time, detergents—despite their relatively low volume—prevent aeration of the water. The result: all forms of life cease to exist. In those conditions, not even a banana peel will biodegrade.

In some parts of Colombia's major polluted rivers—the Cauca, the Magdalena and the Bogota—the detergent biodegradation process is close to zero. How toxic are the detergents manufactured in Colombia? What happens if those detergents enter the food chain of animals and humans?

Legislation states that the maximum quantity of detergents must not exceed 0.5 milligrams per liter of water. "In the measurements we make regularly of the Bogota

River," says Sarmiento, "we generally find concentrations between 0.8 and 1.2 milligrams per liter of water. Sometimes we have found levels of 5.0."

Apparently nothing will change much in the near future. In industry, Bogota's soap and detergent producers—seven of the 17 major companies in Colombia—will by 1994 take an active part in an industrial effluents control program. Some, like Detergentes, S.A., are adapting their discharge systems to trap pollutants, especially oils.

In the consumer area, things will remain the same: the synthetic detergents produced in Colombia are of the BAS (Branched Chain Sulfonated Aquilbenzene). One characteristic of BAS is high foaming and slow biodegradability. And the situation is soon going to worsen; according to the latest annual report by Confecamaras [Confederation of Chambers of Commerce] on the 1,000 largest companies in Colombia, they are going to increase.

Who Pays More for BAS?

The synthetic detergents manufactured in Colombia are of the branched type: the carbons unite with benzene in a branched structure. This means that the final product tends to produce a great deal of foam, in addition to biodegrading slowly.

Since 27 June 1975 that process has been done in a branched aquilbenzene plant operated by Ecopetrol in Barrancabermeja. The complex was designed by the U.S. firm Chevron and built at a cost of \$9 million at that time.

BAS was introduced to the world in the early 1950's and it redefined washing methods: by decreasing water surface tension, its ability to penetrate under grease and grime is improved.

But the growing concentrations of foam or scum that began to appear in the rivers of the United States and Europe led to the introduction in the 1970's of LAS (Linear Chain Sulfonated Aquilbenzene).

Its advantages: reduction of foam and quicker biodegradation. In normal conditions (water with a minimum oxygen level of 3.0 parts per million), it breaks down in seven days. Under the same conditions, BAS may linger from 40 to 120 days.

A change in detergents could apparently provide ecological benefits for Colombia. Ecopetrol would have to modify its Barrancabermeja plant. "The refitted plant," says the Andes study, "would produce a fairly expensive detergent." A 1984 Ecopetrol study calculated conversion costs at \$100 million. This would increase the cost of producing the detergent base by 120 percent.

For manufacturers, the change from BAS to LAS would mean altering their sulfonation plants (the final step in producing detergent). The price of the product to the consumer would increase 140 percent, according to the Andes study.

There are other reasons why BAS has not been eliminated: "This change could obviously provide a solution for ecological problems," says the anonymous Ecopetrol official. "But at the same time, waste water treatment plants would have to be built." And large scale projects of that type have not been projected anytime soon.

Finally, the government is still profiting from this investment made 20 years ago, when the ecological situation was not so critical.

Health Minister Reports on Over Use of Pesticides

*PA2204013892 Santa Fe de Bogota Inravisión
Television Cadena 1 in Spanish 1730 GMT 21 Apr 92*

[Report by Marcela Duran]

[Text] The public health minister has seriously criticized the use of pesticides in different parts of the country. The chemicals used in farming rice and cotton are causing serious damage to children and peasants. This report is worrying and serious.

Health Minister Camilo Gonzalez reported on 21 April the over use of pesticides in the country. He said that in some cases the use of pesticides exceeds the limit amount by 400 times.

At the opening of the international forum of pesticides, which is being held in Santa Fe de Bogota, Gonzalez stated Colombia is already suffering from the results of the irrational use of chemicals.

According to a study by the Public Health Ministry, congenital malformations have been found among newborn babies in the town of Espinal, Tolima Department, due to the pesticides used in farming rice and cotton.

The situation is also critical in the eastern part of Antioquia Department, where over the last 12 years, 5,618 cases of intoxication caused by the use of chemicals have been recorded.

Meanwhile, the Inderena [Institute for the Development of Renewable Natural Resources] distributed a worrying report. A high concentration of chemicals was found in the soil of the rice-producing areas and the tissue of fish. According to the study by the Inderena, the most affected areas are Santa Marta's Cienaga Grande and the Zapatosa Cienaga swamps, the high and medium basin of the Rio Meta, Rio Ariare, and Rio Cauca, and the Bogota Savannah.

[Begin Gonzalez recording] Increasing controls should be established. We have not yet managed to strike a balance for rational use of pesticides. In some regions, it has been determined that approximately 400 percent over the limit is used by kilogram hectare, or liter hectare in the case of fungicides. This has harmful effects on agriculture, the environment, and health of the population. [end recording]

In addition, Gonzalez reiterated his criticism over the use of glyphosphate against poppy crops. He said that aerial fumigation must only be used in extreme cases to avoid further damage to the ecosystem.

GUATEMALA

Rerouted Achiguate River Ruinous to Farmers

92WN0431B Guatemala City PRENSA LIBRE
in Spanish 9 Mar 92 p 4

[Article by editor Raul Meono Rodriguez]

[Text] Deforestation, environmental pollution, and uncontrolled appropriation of the river's waters have caused a severe drought, as well as the death of the Achiguate River along an expanse of about 15 km, before it reaches its end in the Pacific Ocean waters.

This tragic reality was charged yesterday by many farmers, peasants, and ranchers from the southern coast, who explained that they have been suffering severe economic losses with their crops and livestock.

What was once a river running full, on which it was almost impossible even to navigate, has become a desert-like road along which any person or animal can travel in search of a little water.

The Achiguate River, which rises in Antigua Guatemala, at Sacatepequez, can no longer complete its course to the Pacific Ocean waters, in the vicinity of the port of San Jose. Rather, it does so forcibly now, about 15 km ahead, where it becomes a small pond.

According to the information obtained on the spot, the Achiguate River has obviously had its volume of flow reduced as a result of deforestation and environmental pollution. Despite this, its water volume is still acceptable when it flows through the Department of Escuintla. Nevertheless, it is being lost because of the uncontrolled diversions made by many farmers along its course.

The river has been diverted at several points to farms and sugar mills, with detrimental results for many people, because they are no longer receiving the precious liquid.

A tour made yesterday by helicopter enabled us to observe how the river waters have been rerouted, particularly at two points on the Apolonia farm. Its owners have been cited directly for taking, without control, about 10 cubic meters of water per second, of the 12 cubic meters carried by the river.

The other two cubic meters are evaporated or consumed on a section of approximately two km; so that the remaining 15 km from the river's final destination have become a desert.

Farmer Giovanni Recinos, from the village of Los Magu-eyes, San Jose, Escuintla, claimed that the drought has damaged the papaya and corn plants, as well as the

livestock as a whole. Jose Vitelio Herrados, from the Los Angeles subdivision, remarked that the water shortage in those localities is hurting all the residents alike.

Victor Manuel Navas, a resident of La Barrita, added that the lack of moisture has damaged kilometers of land and the absence of water from the river has hurt the fishermen's economy.

Groups that have been affected also noted that the uncontrolled reroutings of the Achiguate waters are causing clogging that, during the winter, prevents the normal channeling of the water. It overflows in different locations, causing severe problems for livestock raising and agriculture.

Furthermore, those reporting from the farms, subdivisions, and settlements of La Rubia, Los Angeles, La Barrita, El Rosario, Los Magueyes, and other nearby localities are requesting that the Ministry of Agriculture look into this problem so that the water may be used by everyone, according to their needs, and so as to prevent individuals from consuming according to their taste and whim.

ASIES Says Potable Water To Disappear by 2010

92WN0431A Guatemala City PRENSA LIBRE
in Spanish 9 Mar 92 p 17

[Text] Water pollution in Guatemala has reached all the catchment basins, as was indicated at the seminar organized by the Association for Social Research and Studies (ASIES) to analyze the metropolitan region's environmental problems.

As the speakers explained, the most serious aspect of the pollution lies in the use of rivers and streams for carrying garbage and sewage, as well as the fecal contamination of the water, with its pathological content, which constitutes a potential danger to the health of the communities. Moreover, they emphasized that the population growth has increased water use, resulting in a general decline in its quantity and quality of water for purposes of household consumption.

Dr. Ricardo Asturias Valenzuela, representative of the capital municipality, declared: "The problem is very serious, to the extent that communities are already encountering serious difficulties in finding sources of supply."

They stated in conclusion that, on this basis, it was determined that by the year 2000 or 2010 there will be an almost total lack of water in the Department of Guatemala City and other regions of the country.

PANAMA

Legislative Assembly Creates Commission on Environment

PA2104043692 Panama City EL PANAMA AMERICA
in Spanish 20 Apr 92 p 12a

[Text] The Legislative Assembly has approved the creation of the Commission on the Environment and Development, which will be tasked with matters concerning Panama's ecology.

This commission was part of the Commission on Agricultural and Livestock Matters, but it will now be autonomous in the search for coherent formulas for the preservation and protection of the fauna and flora, both on land and in the sea. It will also be involved in the development and exploitation of natural and artificial renewable resources and in the controlled use of soil and forests. In addition, it will be in charge of legislation on the conservation, use, and protection of the continental shelf; on the struggle against air pollution; and on deforestation. The legislation will seek to prevent continued ecological deterioration.

The commission will oversee the import, marketing, export, exploitation, and transportation of species of flora and fauna, as well as the use of products, by-products, substances, or any polluting agents. It will also promote environmental education programs to defend the country's ecology and protect the canal basin.

In the meantime, the Commission on Agricultural and Livestock Matters will continue to legislate on issues related to the import, raising, improvement, export, exploitation, and transportation of cattle, goats, pigs, and poultry.

The Agricultural Commission will also study and express its views on aquaculture; apiculture; the production of grains, vegetables, fruits, and farm products; as well as the use of equipment, supplies, and medicines in farming activities. In addition, it will oversee the exploitation, import, export, improvement, and marketing of these products.

VENEZUELA

Study Reveals Decline in Use of Ozone-Depleting Substances

92WN0404B Caracas EL UNIVERSAL in Spanish
Section 2, 9 Mar 92 p 30

[Article by Tania Vegas]

[Text] In six years, Venezuelan per capita consumption of substances that deplete the ozone layer has declined by more than 30 percent, according to the results of the

most recent study carried out by the Ministry of Environment and Natural Resources (MARNR) in collaboration with the Ministry of Development and the Produven enterprise.

The purpose of this study was to determine the situation with regard to the methods of consuming, producing, and importing each of the eight compounds over which the Montreal Protocol establishes control. These compounds include the chlorofluorocarbon gases (CFC's), which are basically used as propellants in the aerosol industry, as cooling bases in the air-conditioning industry, and as blowing agents in the manufacture of polyurethane foam. "The results indicated that total national consumption of these substances came to 3,940 tons in 1986, which was 0.34 percent of world consumption. The figure for per capita consumption was 0.27 kg."

"Per capita consumption had dropped to 0.2 kg by 1990, and to 0.17 kg by 1991, representing a reduction of more than 30 percent in six years," the report of the Technical Norms and Legal Advisory Department of the MARNR showed.

This is regarded as an achievement that goes far beyond the requirements of the international provisions for this sector in effect for the developed countries. To the point that Venezuela was recognized by the United Nations last year as one of the developing countries that has brought its consumption level below the established limit of 0.3 kg per capita, and has, in addition, met all of the requirements set forth for this group of countries.

Venezuela was one of the signatories of the 1985 Vienna Convention for the Protection of the Ozone Layer and the 1987 Montreal Protocol for the Control of Ozone-Depleting Substances. Consistent with the commitments made in these accords, the environmental and health ministries issued a joint resolution in July of last year that went into effect in July of this year. This resolution prohibits both the manufacture and the import of aerosols containing CFCs and halogenated products, with the exception of certain medicines and products for industrial use for which there are as yet no substitutes.

"Through the Multilateral Fund of the Montreal Protocol, which was established to facilitate cooperation in the process of reducing the use of these substances in the developing countries, the national executive branch is receiving special aid. This has made it possible to promote the industrial conversion of various enterprises that use substances and equipment for which there are now feasible substitutes and alternate technologies on the market," the MARNR report said.

Making further use of this fund, the Ministry of Environment also has plans to coordinate a series of seminars, demonstration programs, and education and training courses for technicians in the next five years. They will be designed to serve the various industrial sectors that use the substances in question, with a view to

continuing to incorporate substitute methods and techniques and to optimizing the process by controlling leaks and recycling and recovering these compounds.

However, in its Report on the Environment in Venezuela in 1991, the Bioma [Venezuelan Foundation for the Conservation of Biological Diversity] expressed the view that the MSAS [Ministry of Health and Social Welfare]-MARNR resolution prohibiting the production and import of aerosols containing ozone-depleting substances "is little more than symbolic," because not even 5 percent of the aerosols produced in Venezuela last year contained these components. This is because "in our country, mixtures of propane and butane, which are petroleum derivatives and therefore more readily available and cheaper to produce for us, are basically used as propellants."

This report also said that the enterprise that produces CFC gases in Venezuela is Produven, a branch of PDVSA [Venezuelan Petroleum, Inc.], which, although it has a production capacity of 10 metric tons per year, operated at only half that capacity in 1989. According to the report, some 5,000 tons of CFC's were produced in the country in 1990, representing approximately 0.5 percent of the total world production. It also said that the conversion of Produven for the production of substitutes will not be completed until 1995, and noted, in this connection, that until last year, no one had sought any financial aid from the funds offered by the Ministry of Development through the FONCREI [expansion not given] and the FINTEC [expansion not given] in order to convert this plant.

However, there are also other sources of gases that destroy the ozone layer, such as the burning of vegetation, which releases nitrogen and sulfur oxides. In this connection, the Bioma noted that estimates indicate that Venezuela is releasing 32,000 tons of nitrogen oxide and 4,500 tons of sulfur oxide as a result of this process.

Rise in Incidence of Environment-Related Diseases Noted

92WN0404A Caracas *EL UNIVERSAL* in Spanish
Section 2, 10 Mar 92 p 21

[Article by Magda Echezuria]

[Text] The problem of the environmental crisis has, as usual, been accompanied by a process which produces seven-headed monsters, due to the failure to find specific solutions to the conflicts arising from the deterioration of the environment.

One of the seven heads has developed in the health sector, and it is threatening to become a veritable hydra of Lerna spewing poison right and left.

According to the Environmental Advisory Office of Bioma [Venezuelan Foundation for the Preservation of Biological Diversity], the increase in the incidence of diseases related to damage to the environment has

spiraled upward more rapidly than the dollar. And if it were not for the fact that this is a somewhat abstract concept, one might easily think that this phenomenon is responsible for the new hole in the ozone layer and that the next visitor might be from the moon.

According to the research this institution has pursued through government bodies and entities involved with the health sector, this type of pathology is on the increase at a rate five times that of population growth. What this means, unfortunately, is that if we continue along this same path, there will not be a single entirely healthy person left in this territory within a few years.

The document drafted by the Venezuelan Foundation for the Preservation of Biological Diversity warns that during the first quarter of 1991 alone, diseases such as diarrhea in children under four years of age, hepatitis, and malaria showed an increase of between 10 and 20 percent per year. On the other hand, bronchial asthma and dysentery have also increased by 10 percent since 1990.

In Venezuela, many of the respiratory and skin diseases have their origins in atmospheric pollution. In this group, colds, bronchitis, asthma, dermatitis, sinusitis, and other diseases of the respiratory tract might be mentioned. These, then, have seen an increase of 100 percent in their incidence every 10 years, which is 1.5 times the rate of population growth.

Although some might think otherwise, it was determined in 1990 that atmospheric pollution is one of the main causal factors in the increase in the incidence of respiratory diseases in children under five years of age, according to Dr. Thais Cabrera, head of the Pediatrics Department at the Luisa Caceres de Arismendi Hospital.

In the dermatological field, the picture looks rather gloomy. This is due, we would say, to the weakening of the giant sunshade that protects our planet from ultraviolet rays. Venezuela has contributed some 5,000 tons of chlorofluorocarbons, a figure which represents 0.5 percent of world production, to this process. We are now aware of the consequences, and although the market is saturated with products providing protection from the sun, they will do no good if we continue to consume products that destroy the ozone layer.

Lake Valencia Cleanup Program Planned

92WN0458A Caracas *EL DIARIO DE CARACAS*
in Spanish 7 Apr 92 p 13

[Article by Marco Tulio Socorro M.]

[Text] When the Cleanup Program being carried out by the Ministry of Environment is completed, it will no longer be necessary to wear a clothespin on one's nose to visit Lake Valencia. It will be possible to use the sewage from the Aragua and Carabobo cities and towns to irrigate nearly 6,000 hectares of farmland; while the lake

itself will again have fish fit for human consumption and be capable of supplying pure water as far as thirsty Caracas.

Lake Valencia is a closed basin, which means that sooner or later, all the water flowing through Aragua and Carabobo territory will end up in that reservoir, with everything it is carrying.

And it can carry any amount of pollutants, ranging from industrial effluents to sewage from Valencia, Maracay, and all the other towns in the watershed. This includes organic and chemical waste from livestock raising and agriculture.

To make matters worse, given the region's demographic growth and the loss of the lake as a water resource, it has proved necessary to bring clean water from another system to this closed basin. Once that water has been used, it follows the same course to the lake, raising its level to the point of threatening Maracay's riparian districts.

From the air one clearly perceives the abuse to which those 3,500 hectares of water are being subjected: At each point where a tributary stream evacuates, the filth spreads like a fan, staining the surface in various brownish tones. This attests to the direct dumping of seven cubic meters of untreated municipal sewage per second.

How can Lake Valencia be freed from this besiegement? The only solution is to free the rivers from the dumping of dirty water as well: in other words, to stop using the watersheds as a sewer. This would require stopping the urban and industrial effluents before they enter any natural channel, subjecting them to treatment, and releasing them after they have been purified.

Generally speaking, this is the end goal of the "Lake Valencia Total Environmental Cleanup Program" being implemented by the Ministry of Environment and Natural Resources, at a cost of 8.125 billion bolívares. Forty percent of this sum originates in financing from the Inter-American Development Bank.

The project includes the construction of sewage catch basins and traps in both states, as well as several pumping stations and two treatment plants, forming a defensive shield against the tide of pollutants.

And in the Third Year It Was Resurrected

"Once the water collection and treatment infrastructure begins to operate, the lake will immediately start to recover," claims the environment minister, Enrique Colmenares Finol, filled with confidence in what constitutes one of the projects for which his administration will be remembered. "Within three years we'll see it clean, without those stains caused by pollutants."

Aboard the plane on which he is traveling to inspect the progress of the work, Colmenares Finol draws on paper the diagram of the Cleanup Program. He sketches the

lake, its tributary channels, and the main cities and towns, drawing a line parallel to the sides of the reservoir that will intercept the channels. "On all these fronts, the catch basin will stop the effluents, leading them to the treatment plants. As a result, 90 percent of the pollutants currently entering the lake will be eliminated, and it will be able to recover by itself."

He adds that the Cleanup Program, by governing the water flow, will control the lake's levels. Suddenly, the lake becomes visible from the window, and the minister points to the Maracay districts threatened by the rise in the water level. He explains: "In the past, the problem was the opposite: the lake was declining because, since it is a closed, independent basin, water from the basin was going into every cup of liquid removed from here."

The Lake's Shield

Both the engineers involved and the minister himself use an almost military terminology to explain the constant battle that will have to be fought by the defensive infrastructure being built around the lake. They talk about "fronts" and "flanks."

Along a dusty highway we reach one of the "fronts," the site on which the Taiguaiguay treatment plant has been under construction since August of last year. It will have to purify the discharges from Turmero and Cagua (currently emptying into the Aragua and Turmero Rivers), as well as those from the metropolitan zone of Maracay and Palo Negro.

The water will arrive through the catch basin (an underground cement tunnel that spans dozens of kilometers), and will enter a circular sand trap where, through centrifugal force, the components of various densities will be separated: the liquids on one side and the solids on the other. The latter, whether they be logs, plastics, or metals, will be collected and disposed of in a sanitary landfill.

Then the torrent, moving at 3.8 cubic meters per second, will start flooding four rectangular tanks, five meters deep, called "primary reactors." Each one has the capacity to receive 85,600 cubic meters of water.

Mark Landsell, the engineer in charge of the project, explains that these "reactors" will operate like anaerobic ponds, in which the biomass will be converted into methane gas, a harmless compound that will be left free in the atmosphere. Meanwhile, the sludge will descend by gravity toward the four hoppers installed at the bottom of each tank. These hoppers will have sumps that make it possible to extract the sludge, which can be reused as fertilizer.

During the next step, the liquid mass reaches an enormous pool two km long by 700 meters wide, which will occupy no fewer than 155 hectares of terrain, with a depth varying from one to 3.5 meters. It will be retained there for a period of five to 10 days and will then move on to the neighboring Taiguaiguay reservoir.

In both the gigantic pool, called a "facultative pond," and the reservoir, Aragua's abundant sunlight will be responsible for killing the bacteria. And, with its ultraviolet rays, combined with the sedimentation, depredation, and stagnation mechanisms, as well as the cleaning action of the algae, which provides a high pH, and toxins capable of destroying harmful microbes, the reservoir water will be left fit for irrigating plantations.

The capacity of each of the components is expected to control the effluent volumes by the year 2010.

Such a facility requires a great deal of space, and that is one of the criticisms made of the Taiguaiguay system. Some engineers think that the system is archaic, and that it could occupy less space through the use of machinery. The minister, for his part, claims that the criticism is simply coming from the vendors of such machinery.

He maintains: "This is a technology devised in Venezuela, for our country's conditions. Fortunately, we have sufficient space here to install these gigantic pools; and we are also making use of the tropical sun, which is an invaluable resource."

He adds that, not only is the use of traditional technologies unnecessary, but it is also far more expensive, with more complicated maintenance, not to mention the energy cost that their operation would entail. The sun, on the other hand, is free.

The four "reactors" are now ready at Taiguaiguay. The tractors will establish the shape of the two km pool that, in fact, had to be relocated in the plan so as not to interfere with a poultry farm left inside the original plot. The plant is due to open in August 1993.

The other main defensive "front" is located in the direction of the lake's western shore, in Carabobo: the La Mariposa Residual Water Treatment Plant (not to be confused with the white water treatment plant located in Miranda and supplying Caracas with water). The La Mariposa plant will take in effluents from Valencia and its metropolitan area at the rate of 2.4 cubic meters per second.

The system at La Mariposa is similar: It includes sand traps, four separator tanks, and drying beds for sludge. However, it will not have a pool as enormous as that at Taiguaiguay because, with the lack of an adjacent reservoir on which the sun can be allowed to act, the final effluent will have to be even purer. Hence, it will be necessary to use filters, aerators, and machines capable of keeping the water in motion.

Minister Colmenares explains that, the more the water is agitated, the more rapidly it will be purified through

oxygenation and sedimentation: a phenomenon that can be observed in nature. As an example, he cites the case of the Guaire, which, upon leaving Caracas, drops precipitously about 600 meters over a short span. This waterfall eliminates at least part of the tide of filth that would poison the capital's river.

Between La Mariposa and Taiguaiguay, 70 percent of the effluents dumped into the lake will be treated, and a similar project being implemented by INOS [National Institute of Sanitation Works] at Los Guayos will process two additional cubic meters per second. Therefore, the volume of sewage controlled in the basin will amount to 94 percent of the total.

To prevent the continued draining of dirty water into the lake, 20 direct discharges into the Cabriales and Tocuyito Rivers will be trapped in Carabobo. An additional 29 direct discharges affecting the Guey, Las Delicias, and Turmero Rivers will be trapped in Aragua.

Let There Be Water

If everything turns out as planned, Aragua and Carabobo will have sufficient pure water even for supplying thirsty Caracas. The Cleanup Program anticipates that, when Lake Valencia recovers satisfactorily, its water may possibly be used to supply the entire central zone, including the Federal District, in conjunction with other sources of supply.

The sewage from Maracay treated at Taiguaiguay will make it possible to irrigate 5,400 hectares even in summer, and the sewage from Valencia will irrigate another 1,300 hectares in El Paito. There will be the additional benefit that this liquid mass will carry a high nutrient content, such as that of phosphorus and nitrogen, which will allow for considerable savings on fertilizer.

The availability of abundant treated water for irrigation will make it possible to substitute for the use of underground water, expensive to extract. It will thereby reduce the phenomenon of settlement, or the sinking of land caused by overutilization of underground bodies of water, resulting in the destruction of buildings.

Colmenares Finol claims: "This is one of the three most important cleanup projects in the world. Supposedly, sewers don't bring votes, because they are unseen. Besides, the results will be perceived within three years, that is, under a different government, and that may perhaps be why there has been no willingness to deal with this problem."

The environment minister does not hesitate to add that even commercial fish breeding may be developed in Lake Valencia during this very decade.

REGIONAL AFFAIRS

Experts Examine Arab World Water Resource Prospects

92WN0371A Paris AL-WATAN AL-'ARABI in Arabic
7 Feb p 26-28

[Unattributed report: "Arab Experts See Water Shortage as National Security Issue"]

[Text] Mr. Jawwad al-Hamad, director of the Center for Middle East Studies in Amman, declares:

"Water is the first topic in the multilateral negotiations because it is a primary concern for Israel. That is why the saying that 'water will be the focus of the dispute in the Middle East,' continues to be current. Others foresee something even more dangerous; that the outbreak of the dispute is only a matter of time. One of the most important reasons is that water reserves that have already been discovered fall short of current and projected needs at the end of the century.

"One may add another factor that reveals itself in the conflict of interests between source and end-user countries. Aspects of source-country benefits often control the end-user countries' ability to utilize water resources to develop social and economic growth.

"Hence, the manifestation of Syrian-Iraqi apprehensions over Turkish projects in the upper Tigris and Euphrates rivers, and of Egyptian-Sudanese apprehensions over what is being said about Ethiopian-Israeli projects in the upper Nile, which has its source in the Ethiopian plateau.

There are also Jordanian-Syrian-Lebanese-Palestinian fears of the quickening pace of Zionist projects to steal and exploit the waters of the Jordan, al-Yarmuk and al-Litani rivers, in addition to the theft of underground water west of the Jordan River.

"It is feared that all these apprehensions might push the countries of the region to the brink of armed conflict if the exploitation of water resources is not regulated by countries with common water sources to determine the volume of water resources and estimates of current needs in order to arrive at a diagnosis of the problem and its future course."

Arab Water Situation

Several years ago, water expert Mr. Muhammad Samhan, pointed to the severity of this problem in his geographic study of water resources in the Arab nation. In an interview with AL-WATAN AL-'ARABI, he reviewed the Arab water situation in general. He said:

"The total area of the Arab nation is approximately 14 million square kilometers, which is equivalent to 9 percent of the [world] land area, while its water resources comprises approximately 7 percent of world water resources.

If we were to glance at the rainfall map of the Arab World, we would find that 15 percent of its rain falls on 66 percent of its area, at an average of no more than 100 mm per year, or 350 billion cubic meters [m^3]. This is not sufficient to establish a modest rain-fed existence. Rainfall that ranges from approximately 100 to 300 mm covers 25 percent of the Arab nation with 440 billion m^3 per year. Anything in excess of 300 mm covers the remaining percentage. This quantity reaches up to 1.515 trillion m^3 . Due to meteorological conditions, most of those quantities evaporate and only a minute part of them are usable.

The total above-ground water resources of the Arab nation is 190 billion m^3 , while the average flow of the Tigris, Euphrates and Nile rivers is 160 billion m^3 . We share those with the Turks and Ethiopians. There are, in addition, 40 billion m^3 of renewable and non-renewable underground water. These natural sources are supplemented by approximately 1.5 billion m^3 of desalinated water."

Mr. Samhan then makes a comparison between the average share of the Arab citizen and his peers worldwide, thereby explaining the extent of the crisis. He says:

"The average worldwide share of water for one individual is 13,000 m^3 per year, while the average share of the Arab Individual is in the area of 1,750 m^3 per year. By varying amounts, one-third of the citizens of Arab countries fall below this line, the lowest reaching 100 square meters. The share of the remaining third is above average, the highest being in Sudan, where the individual obtains an average of 7,000 m^3 per year."

Water, Food Security

On his part, Dr. Mu'in Qaddumi is conducting a comprehensive study of Arab water security, and stresses the necessity of studying the future of water resources. He says:

"We have to consider the future of Arab water resources as one of the main foundations of comprehensive national Arab security. According to the Arab Labor Organization, it is known that the population of the Arab nation is approximately 220 million inhabitants. Of those, 24 million live outside the Arab nation. According to the rate of the population increase, at 3.6 percent per year, one of the highest in the world, the expected population of the Arab nation in 2025 will reach 600 million inhabitants.

"Statistics put the available water consumption in the Arab world at 173 billion m^3 . However, if we want to achieve complete self-reliance in food production, our water needs will rise to approximately 305 billion m^3 . Of course, this assumes no population change. What will the situation be if we were to include the enormous population increase in our calculation?

"It is a difficult equation that clearly reveals that there is a big crisis, and we have to sound the alarms immediately.

"The crisis of Arab rivers is a principal aspect of the problem. This crisis appears in the three most important rivers, the Tigris, the Euphrates, and the Nile, which feed four Arab states. More than half of Arab citizens depend on them. The Nile runs through Egypt and Sudan, which have a population of 80 million inhabitants. The Tigris passes through Iraq, while the Euphrates passes through Syria and Iraq, which have a population of approximately 30 million inhabitants.

"The problem for those four states is that they are considered to be end-user and not source countries. The main sources of the Nile are in Ethiopia and Uganda, while the sources for the Tigris and the Euphrates are in Turkey. This places development projects in those Arab countries at the mercy of projects of the source countries."

In confirmation of this situation, Mr. Jawwad al-Hamad cites some facts. He says:

"When Turkey began the construction of the Ataturk Dam, the operation to fill the dam's reservoirs led to a month-long interruption in the Euphrates' water flow, which had negative repercussions on irrigation and agricultural projects in Syria and Iraq. It also affected the suitability of drinking water. In addition to an increase in water hardness, the river's salinity rate after it resumed its flow reached 1,260 parts per million [ppm]. This exceeds the recognized international rate which is 500 ppm. The Turkish project also weakened the two Arab states' ability to produce electrical energy.

"These damages were due to the lack of coordination between states sharing a single basin. The interests of those states and available resources are often in conflict with each other." On this topic, Muhammad Samhan declares:

"If, in order to clarify the extent of the crisis, we were to consider the case of the Euphrates River and to study the plans and projects of Turkey, Syria, and Iraq, and the requirements of each state in relation to existing projects or those that are still being implemented, we would find that Turkish projects need 14 billion m^3 annually. On the other hand, Syrian projects need 10.5 m^3 . As for Iraq, its projects require 19 billion m^3 . Thus, the requirements of the three states from this river amount to 43.5 billion m^3 , while its average flow is 28 billion m^3 ."

Samhan follows up on the Nile river:

"The Nile River is considered to be the lifeline for Egypt and Sudan. At Aswan, its flow is 80 billion m^3 . Most of its waters flow from Ethiopia. The Blue Nile, Sobat, and 'Atbarah bring to it 50 billion, 10 billion and 12 billion m^3 , respectively. If we were to take Ethiopia's control projects into consideration—those being implemented or planned—then we would realize that the future

awaiting Egypt and Sudan is undeniably comparable to the future awaiting Syria and Iraq with the Turks.

"It is known that, because of the long period of drought in the Ethiopian plateau, the Nile River basin is suffering from changes in water averages. Naturally, this affects Egypt and Sudan as the countries of the Nile basin that benefit and depend most on its waters."

Israel: Organized Looting of Arab Waters

Adding to the natural threats to water resources in Egypt and Sudan were other threats. The most prominent were those that appeared during the rule of deposed Ethiopian President Mengistu Haile Miriam and which were exemplified in the planning to build dams along the course of the Blue Nile, the richest tributary of the Nile River. Those plans did not take into consideration Egypt and Sudan's shares in the Nile waters. The principal party planning those projects was Israel, which, after the Turks and the Ethiopians, is now considered to be the third party to the Arab water problem.

Israel is the principal player in the organized looting operation of Arab water resources, as a part of a hegemony plan over those resources, which are considered to be the sole source of agricultural development in the Arab world.

On the true Israeli role in the Arab water problem, Muhammad Samhan declares:

"Israel always considered the land-water equation as the basis, even the sole basis, for its existence. It is not strange therefore, that the first Jewish settlement in Palestine, 10 years before the convening of the Basle Conference, should be established at the sources of the Jordan river, the principal artery that fed the beginning stage. Otherwise, it would have had to search for a principal artery that would grant it the reasons for remaining, developing, and prospering. To understand the influences and negotiations on Arab land and water that are now taking place, one has to consider the land, population, and water situations of the state of Israel.

"In 1955, or seven years after the establishment of the state, its average water consumption more than quadrupled, reaching 1 billion m^3 . In 1969, after establishing its control over the West Bank, Gaza, and the Golan, and the conclusion of the projects to divert the Jordan River, this average rose to 1.565 billion m^3 , reaching approximately 1.75 billion in 1983.

The water budget for the West Bank and Gaza is one billion m^3 , with 900 million for the West Bank and the rest for Gaza. Israel exploits most of these resources and leaves only a little for their original owners. While the inhabitants of the West Bank consume 95 million m^3 per year and the inhabitants of Gaza consume 80 million, the average at Israel's disposal is approximately 800 million m^3 , which is the approximate equivalent of what it steals from the waters of the Jordan River.

The average per capita consumption in the West Bank and Gaza for all needs is 150 m³ per year. This amount more than triples for the Israeli individual, whose per capita consumption reaches 500 m³ annually.

If we were to turn to the statistics on the Arab citizen's consumption, we would find that the Israeli citizen consumes more than citizens of the following Arab countries:

Kuwait, 100 m³; Bahrain 240 m³; the United Arab Emirates (230 m³); Qatar (300 m³); Morocco (350 m³) and Saudi Arabia (475 m³).

"According to American studies, it costs approximately five dollars to desalinate one cubic meter of sea water. If we were to estimate, on the basis of this indicator, the value of Palestinian water that Israel steals, we would find that it is equivalent to \$4 billion. It steals the equivalent of twice that amount from the Lebanese, Jordanians, and Syrians. The total expenditure of the Arab Gulf countries on desalination is approximately \$8 billion for 1.62 billion m³. However, Israel alone steals \$12 billion of our water annually."

Do you now know why Israel insists on its occupation of the West Bank, Gaza, the Golan, and southern Lebanon?

Israel has paid special attention to the Jordan, al-Litani and al-Hasbani rivers, in accordance of the Zionist theory that calls water sources the vital factor for supporting the economic structure of the Jewish state.

Before considering the prospective outcome of the conferences and direct negotiations between the Arabs and Israel on dividing water resources, we have to mention the most important project to divide water resources between Israel and the Arabs in 1955, which is the Johnston Plan, since those countries regard it as the real procedure to determine water rights for each of them.

This project belongs to Eric Johnston, advisor to the former American president, Eisenhower (1953-1955), who presented a plan to divide water resources between Syria, Jordan, and Israel, and determined each state's share of the common water resources. He proposed several projects in the area with 1.2 billion m³ of exploitable water, 40 percent of which was to be for the Jews.

In spite of the fact that Johnston gave the Jews considerable rights to the waters of the tributaries of the Jordan river, he did not meet with sufficient support from them. Their response to him was the Cotton Plan, which added a proposal to draw the waters of the al-Litani River so that the total exploitable water amounted to 2.245 billion m³, with 1.29 billion being Israel's share.

It is worth pointing out that the Arabs rejected this project. The first Arab conference was convened to discuss the water situation when Israel diverted the waters of the Jordan River to the Negev. They also devised several projects to exploit the waters of the al-Hasbani, al-Litani and Yarmuk.

Jordan is considered to be most affected by the loss of its waters. On this topic, Dr. Ilyas Salamah, the director of the Water Research Center at the University of Jordan, says: "The water deficit in Jordan is expected to reach 400 million m³ annually by the year 2000. Nonetheless, Jordan will be able to cover its requirements for current and future projects, and the requirements of the population increase up to the year 2010 if it obtains its full rights to international waters. According to the Johnston Plan, Jordan's share in the waters of Jordan River delta is 100 million m³. Presently, it does not even receive a drop of that. As for the Yarmuk river, Jordan receives between 100 to 110 million m³ from its [Johnston] plan share of 375 million m³. This is because Israel is exploiting these resources through its geographic and strategic position."

Turkish Peace Pipeline

In the shadow of this crisis that worsens every day, the safety zone proposed by Turkey to exploit its excess water appears on the horizon. Eight Arab countries,—Syria, Jordan, Saudia, Kuwait, Oman, the United Arab Emirates, Qatar and Bahrain—will be supplied with these waters from Seyhan and Ceyhan rivers, which have an average daily flow of 39.17 million m³. Since Turkish projects for the two rivers have a daily requirement of 23.4 million m³ for various needs, Turkey is able to dispose of 16.1 million m³ and is offering 6 million m³ of that quantity.

Turkey had began soliciting for this project in 1986 under the title of "Pipes For Peace" which was termed by some as "Pipe dreams." An American company made a study of the project and set its total cost at \$21 billion. It also set the cubic meter price for the countries of the Arab Gulf area at \$1.07, and for other areas at 84 cents per cubic meter. Those prices were set according to tenders at that time. They could, therefore, double after beginning the project. According to reports from the company involved, the price will remain reasonable from the point of view of the Turks and the American company, when compared to the cubic meter price of desalination plants which is estimated at \$5 per cubic meter.

Problem and Solution

America supports this project and is offering other incentives that include promises to deliver atomic reactors to desalinate seawater and to cover all the region's water requirements through numerous solutions that it is planning for the area, which support the peaceful solution that it is advocating. This leads some observers to wonder if the crisis is genuine or feigned to ease the way for a peaceful solution.

Dr. Ilyas Salamah denies this suspicion and says:

"There is a crisis which will continue, since the area does not have what it needs to cover its current requirements, not to mention future ones!

"The problem has several solutions. Some are regional projects like piping water from Turkey through the Pipes For Peace project, but it puts us at the mercy of the Turks, as we were a hundred years ago. Several countries support this solution to link the region's nerve center with Turkey.

"There is another solution, but it is costly in the long run. It is the transformation of the economic structure from an agricultural one dependent on irrigation to an industrial one. However, it requires tremendous expenditures, since it requires \$2,000 to create a job in agriculture, while ten times that sum is required to create a job in the industrial sector."

Jawwad al-Hamad thinks that the region needs "a strategic reserve to guarantee its future, even if it costs many times what is presently available, like the construction of desalination plants in various Arab countries, in addition to conducting a comprehensive survey of the Arab region to discover underground water reservoirs to serve as a strategic reserve. There is also the call to a joint Arab debate to form a strategy for Arab water security, as part of the general strategy for Arab security and the avoidance of political disputes when discussing such matters and asking the UN to play its role in restoring Arab water rights."

Dr. Mu'in Qaddumi thinks that Arab efforts to solve the water problem continue to be sub-standard and says:

"We are experiencing total backwardness, one aspect of which is the water problem, because we haven't thought about it until recently. We treat it with conferences and seminars, without achieving any progress or success on the ground.

"So why don't we construct hundreds of artificial lakes in the countryside and Arab villages, and desalination plants and dams, with the help of 50 million unemployed Arabs. Here we recall what [Egyptian president] 'Abd-al-Nasir did, who built the High Dam and protected Egypt from thirst and floods.

Arab Officials Meet To Coordinate Environmental Plans

NC0505131792 Cairo MENA in Arabic 1545 GMT
4 May 92

[Text] Cairo, 4 May (MENA)—Concluding its sessions here today, the Executive Council of Arab Ministers in Charge of Environmental Affairs recommended forming a united Arab delegation to the Conference on Environment and Development in Brazil in June.

This was stated by Dr. 'Atif 'Ubayd, minister for cabinet affairs, minister of state for administrative development, and official in charge of Egyptian environmental affairs. He said the council also recommended that Cairo's Environment and Development Center help the Arab countries with their domestic environment plans as it did the national plan prepared in Egypt. He added that

the council recommended compiling a list of experiments carried out in Arab countries to establish green belts around large cities to help others and to avoid wasting time on similar studies.

He added that the council also recommended financing environmental information to urge citizens to help protect the environment.

He noted that the council rejected a special environment tax on petroleum, adding that the Arab stand on this issue is clear—if the aim is to impose a tax on pollutants, this tax must be imposed on all resources, including nuclear power.

He stressed that such a tax should be reasonable and limited, adding: It must be clear how the money raised by collecting this tax will be spent and what the benefits will be. All countries, particularly those which are developing, should be involved in this.

Arab environmental affairs ministers from Egypt, Syria, Lebanon, Kuwait, Saudi Arabia, Morocco, and Tunisia took part in the meetings.

BANGLADESH

FAO Conference Views Regional Strategies on Land Degradation

92WP0202A Dhaka THE BANGLADESH OBSERVER
in English 14 Feb 92 p 1

[Text] New Delhi, 13 February—Agriculture and Irrigation, Water Development and Flood Control Minister M. Majid-ul-Haq said that one-third of the cultivable land of Bangladesh was under threat of desertification due to withdrawal of water of major rivers in the upstream, reports BSS.

He emphasised on rational use of water from these rivers by all beneficiary countries, to arrest desertification process in the flood plains of the Ganges and the Brahmaputra river systems.

He was presiding over the 21st regional conference of Food and Agriculture Organisation (FAO) held in New Delhi yesterday.

Twenty-seven countries are taking part in the conference in which Bangladesh, India, Indonesia, Maldives, Malaysia, Mongolia, Papua New Guinea, Sri Lanka, Vietnam are represented by their agriculture ministers, while Tonga by her prime minister.

The main issue of the conference are to enhance rural employment and income through the development of agro-processing industries and to determine regional strategies over arresting land degradation.

Mr. Haq pointed out various constraints facing by the Bangladesh farmers in agroprocessing industries. He said

that farmers cooperative might play a significant role in accumulating capital for setting up such small scale industries.

The Agriculture Minister emphasised "country code of conduct" in farming for using pesticides. He also said that training of farmers in modern technology and its application and marketing of the agro-products might help achieve mass-employment in the agriculture sector.

General Majid-ul-Haq also had a meeting with the Indian Agriculture Minister Dr. Balaram Jakhar in New Delhi yesterday. The two leaders came to an agreement for taking political initiative in resolving different bilateral issues including agriculture development of both the countries.

In the inaugural session of the 21st regional conference of Food and Agriculture Organization the Bangladesh Agriculture Minister on Tuesday opined for establishing a bio-technology institute in Bangladesh under the initiatives of FAO.

EGYPT

UN Ozone Fund Provides Egypt \$1.5 Million

92WN0416A Cairo AL-AHRAM AL-DUWALI
in Arabic 1 Mar 92 p 5

[Article by Mustafa Sami]

[Text] Montreal, Mustafa Sami—During its meetings on protecting the ozone layer, the board of directors of the UN Ozone Fund agreed to give Egypt \$1.5 million to immediately begin implementing the four plans that Egypt submitted on substituting chemical compounds in place of freon gas now used in refrigeration units, and to recycle the by-products of [foam] manufacture. That was reported by Dr. al-Muhammadi 'Id, adviser to the office of environmental affairs and head of the Egyptian delegation to the meetings.

Dr. 'Umar [al-'Ariti], the Fund's secretary general, said that the board of directors had agreed to spend \$19.5 million to start implementing the plans submitted by Egypt, Mexico, China, the Philipines, Thailand, and Malaysia, and the International Bank for Reconstruction and Development will undertake to finance the projects of these states.

He added that this year the fund has received \$35 million, representing the share of some industrialized states, but that it needed more financial support from rich nations in order to meet the needs of developing states which have begun to make plans to protect the ozone layer.

IRAN

Deputy Energy Minister on Urban Water Problems

92AS0747L Tehran SALAM in Persian 23 Feb 92 p 2

[News Report]

[Text] Lack of attention in the cities to the spread of contaminated water in proximity to clean water supplies was not only polluting the environment but was affecting adversely the economic structure and fabric of the cities.

This statement was made yesterday (Saturday) morning by Enginner Gholam Reza Manucheri, deputy minister of energy for urban water and contaminated water affairs in a meeting with representatives of the mass media. He noted, "Investment in the water sector, contaminated water, and urban water distribution facilities and greater utilization of the existing facilities are important issues in the preservation of the environment and public health and require attention."

He noted that statistics gathered by the World Health Organization showed that 80 percent of the incidence of diseases and 33 percent of deaths in Third World countries were due to the lack of clean water, water distribution system, and contaminated water systems. He stated, "In our country, only 12.5 percent of the population of 30 million inhabitants of cities have a sewage and water treatment system for contaminated water; this is an insignificant figure in view of the fact that 90 percent of the urban population of industrial countries are served by a network of sewage and water treatment systems for contaminated water."

The executive director of the engineering water company and contaminated water announced that at present, water systems projects were nearing completion in 20 cities. He stated that water treatment systems for companies generating contaminated water were being created in 20 provinces and noted that in order to achieve success, a national effort was needed; public participation was necessary for the completion of the undertaking.

The deputy minister of energy for water affairs then referred to the issue of drinking water supplies for urban areas and said, "Urban population in the country is experiencing a rapid average growth of 5 percent and is expected to increase to 72 million by the year 1390. These figures point to the need for greater investment in this sector; in certain areas we have to bring water from great distances."

Engineer Manucheri referred to the problems of water distribution and use and said, "People consider water a cheap commodity and use it carelessly."

Manucheri announced that the average monthly water bill per family was 500 rials which meant that each person used up three rials a day on water.

He pointed out the need for reform in tariffs and the application of suitable rates; the need for desirable services and raising the standard of utilization; better use of water installations and the creation of sewage and water treatment systems for contaminated water; in addition, make greater efforts concerning water treatment systems in relation to contaminated water.

IRAQ

Oil Minister on Environment, Vienna Meeting

JN2004141292 Baghdad INA in Arabic 1115 GMT
20 Apr 92

[Text] Baghdad, 20 Apr (INA)—Oil Minister Usamah 'Abd-al-Razzaq al-Hiti left Baghdad for Vienna today. He is heading a delegation participating in the joint ministerial conference of OPEC and the Independent Petroleum Exporting Countries, IPEC, set for 23 April.

The Iraqi delegation will also participate in the seventh meeting of the OPEC monitoring committee to be held in Vienna on 24 April.

In a statement to INA, the minister said the OPEC and IPEC oil ministers meeting aims to coordinate the stands of these two groups on the environment and global warming in preparation for the UN Conference on the environment and development to be held in Rio de Janeiro, Brazil, in June. These stands should be coordinated in a way that guarantees the long-term economic interests of the developing exporting countries in particular and the oil and energy exporting countries in general.

The minister said that the issue of global warming has become a pretext for increasing customs duties especially on oil, thus threatening the interests of states whose economies depend on oil and energy revenues. This, he said, threatens the economic and social development process in all developing countries because economic development is basically dependent on greater energy consumption.

The oil minister noted that global warming is of concern to all states because of its effect on the inhabitants of the globe. However, this problem should not be taken as a pretext to prevent developing countries from building their economies and raising their people's standards of living. This is especially true since the primary responsibility for increasing the carbon dioxides and nitrogen that cause pollution and change the world's climate falls on the industrialized nations which built their economies and industries by consuming tremendous amounts of energy over the past two centuries and which continue to consume about three quarters of the world's energy.

Due to the absence of any decisive scientific evidence of global warming as a result of gases coming from the burning of hydrocarbon energy sources, any international effort to limit polluting the world's climate should be the responsibility of the rich industrial countries.

The oil minister said that the meeting will enable the OPEC member states and other oil exporting countries to exchange views on current and possible future developments in the world oil market and to coordinate their positions.

The oil minister pointed out that the seventh meeting of the OPEC monitoring committee, which includes all the members of the organization, is holding its periodic meeting to monitor developments in the world oil market and to take effective measures to avoid any market imbalance affecting oil prices.

He also explained that during its February meeting in Geneva, the committee decided that OPEC's overall oil production should not exceed an average of 22.982 million barrels per day, but the continued overproduction by some member states has led to an oil surplus in the market and to a deterioration in prices during the first three months of this year, when a barrel of OPEC oil sold for \$16.50. A slight increase occurred following the unjust Security Council resolution against Libya.

The oil minister stressed that excessive production by Saudi Arabia and the United Arab Emirates is reflecting negatively on the economies of these states and other OPEC members as a result of the deterioration of prices and oil returns. This is evident in the daily loss of \$50 million sustained by the Saudi Arab people because of the deterioration in prices.

He said that despite the repeated Iraqi warnings during various OPEC meetings about the negative effects of the policy of overproduction and reducing prices, the Saudi regime is pursuing this policy as a gift to the U.S. Administration on the occasion of its elections.

He added that this policy by Saudi rulers is directly aimed against Iraq and its natural return to the oil market. He said that continuing such policy will harm all OPEC member states. If Saudi Arabia considers the daily \$50 million loss to be in excess of its people's needs, then it should contribute to helping hungry people in the Arab and Muslim world and the world in general who need this help much more than the U.S. Administration.

He indicated that the current per barrel level of oil prices is approximately four dollars less than the minimum price of \$21 per barrel set by OPEC in July 1990.

The oil minister affirmed that Iraq has scientifically proved that the overall OPEC production ceilings set by the ministerial control committee in September and October 1991 and in February 1992 exceed the market's need and that they will lead to a constant deterioration of prices. This is what has actually happened, the minister indicated.

He added that Iraq's stand on the issue of setting an overall OPEC production ceiling and its distribution among member states is clear and principled. Such a

stand stresses that the member states that took advantage of the 30-state Atlantic-Zionist aggression to increase production should reduce their production in a manner that corresponds to the increase in their output.

Referring to Iraq's return to the world oil market, the minister affirmed that the OPEC ministerial meeting has approved Iraq's stand and considered such return to be a natural right that does not require OPEC approval. It is rather a matter that will be decided by the political leadership of Iraq. He emphasized that when Iraq resumes oil exports the rest of the OPEC member states should reconsider the distribution of the overall production ceiling and the quotas of other states. Otherwise, OPEC should bear the responsibility of any deterioration in prices.

ISRAEL

Fund Allocation Allows Israel To Join Ozone Convention

TA2904110792 Jerusalem Qol Yisra'el in English
1000 GMT 29 Apr 92

[Text] The sum of \$180,000 has now been allocated by the Ministry of Finance, allowing Israel to join an international convention on the ozone layer. If the sum had not been made available, Israel could have been subjected to international restrictions on the import of certain materials liable to cause damage to the protective layer. News that the money, which is to be used for preventive measures, had been allocated came after the Ministry of Environment warned about the dangers if Israel failed to join the convention.

PAKISTAN

National Conservation Strategy Approved

92WN0430A Lahore THE PAKISTAN TIMES
in English 2 Mar 92 p 1

[Text] Islamabad, 1 March—The Federal Cabinet which met here today under the chairmanship of Prime Minister Mohammad Nawaz Sharif approved the National Conservation Strategy.

This is a momentous event, signifying that Pakistanis care enough about their future, and that of their children, to reach a consensus about a plan of action that will conserve the country's environment, its air, water, land, forests, wildlife and other natural resources, in perpetuity.

With the approval of this strategy, Pakistan becomes the 23rd country in the world with an explicit national policy for a sustainable future.

The Prime Minister also constituted a committee for the implementation of the strategy and its programme under

the chairmanship of Mr. Anwar Saifullah Khan, Minister for environment and Urban Affairs, with following members.

Mr. Sartaj Aziz, Minister for Finance and Economic Affairs, Syed Fakhar Imam, Minister for Education, Mr. Illahi Bukhsh Soomro, Minister for Science and Technology, Lt-Gen. (Retd.) Malik Abdul Majid Minister for Food, Agriculture and Cooperatives, Rana Nazir Ahmad, Minister of State for Forests, Mr. AGN Kazi, Deputy Chairman, Planning Commission, Mr. Saeed Ahmed Qureshi, Secretary-General, Ministry of Finance and Economic Affairs, Mr. Zulfikar Ali Qureshi, Additional Secretary Incharge, Environment and Urban Affairs Division, and Mr. Maqsood Sheikh, Additional Secretary, Provincial Coordination.

The Prime Minister will shortly launch the implementation of the National Conservation Strategy.

The development of the National Conservation Strategy is extended over many years. The preparation of the strategy was supervised by a high-level steering committee headed by the Deputy Chairman, Planning Commission, assisted by nine federal secretaries and five eminent private sector resource persons. The strategy is the result of inputs provided by a large number of national experts. Separate reports for developing grass-root communities, for population planning, and for women in development, were also prepared.

An investment portfolio of Rs. 150 billion has been envisaged to meet the requirement of these urgent investments in the country's future, yet each will pay handsomely in conventional economic terms as well. The proposed investment is of the order of 1 percent of GDP over the next 10 years. These programmes will create over one millions jobs in the country.

The programme will be implemented by the government by incorporating the recommendation in the 8th five-year plan, in an integral way, into each development sector. In addition to a separate coordination unit, being set up in the environment and urban affairs division, provincial environmental protection agencies will also be strengthened.

An environment section is being set up in the Planning Commission, with similar cells envisaged in provincial planning departments.

UN Report Calls Nation 'Polluters Paradise'

92WN0428A Karachi DAWN in English 6 Mar 92 p 7

[Article by Ashraf Mumtaz]

[Text] Lahore, 5 March—Pakistan is a 'polluters paradise' where the industry and vehicular traffic are free to cause as much pollution as they want as a result of which not only public health is being badly affected but the country is also suffering economic losses.

This painful fact has been stated in an official report prepared under instructions by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP).

"The freedom and the trend of polluting at will is the order of the day. Pakistan is free for all to pollute. Pakistan is 'polluters paradise', the report said, alleging that even the multinationals were also playing their due role in worsening the situation by discharging their semi or partially, and in certain situations even untreated wastes at their will and convenience.

Citing a number of examples of the industries responsible for adding to the already bad pollution situation, including the state-run units, the report has also pointed out the lethargy on the part of the Government to control the situation.

No Meeting: It has been pointed out that the Pakistan Environmental Protection Council (PEPC) set up several years ago to take police decisions at the federal level was still to hold its maiden meeting. Similarly, the Pakistan Environmental Protection Agency [PEPA], the technical arm of the PEPC, empowered to implement the PEPC decisions, was still to have technical staff.

The experts who have prepared the report have demanded changes in the Pakistan Environmental Protection Ordinance, 1983, to make it compatible with the latest requirements of the environmental protection.

The report says: "The concept of wastes recycling, treatment and disposal does not exist in the industrial sector. Even the highly polluted wastes are being discharged irrationally into water bodies, on soil and in the air. The multinationals do not observe the standards of pollution abatement they conform to in their own home countries. Industrial wastes treatment systems are virtually non-existent in the country and those existing in a few industries, either technically do not meet the requirement standards or they are out of use or are nonoperational."

According to the report, Hazara Phosphate Fertilisers, Haripur, are discharging 52 cubic metres per day of lightly-polluted waste water into a natural stream without appropriate treatment. Three State Engineering Corporations units virtually do not provide any treatment to their effluents and solid wastes compatible with the requirements.

The Lyallpur Chemicals and Fertilisers Ltd., Jaranwala, generates around 240 cubic metres per day of waste water, which is not treated. It is evaporated on site in the open. The emissions from chimneys are being put into the air, without any control, at low heights within the city.

The public sector industry at Faisalabad producing sulphuric acid is not given any treatment before discharge. The factory is situated virtually in the heart of the city.

The Pak China Fertiliser Ltd. Haripur, generates around 5,000-6,000 cubic metres per day of effluent which is drained into the nearby stream.

Four units of Chlor-Alkali producing 600 tons per month caustic soda, are also worsening the situation. Pak Arab Fertilisers, Multan, is producing 12,000 cubic metres per day of waste water which, only after sedimentation and neutralisation, is discharged into an irrigation canal while waste gases in large quantities, even containing nitrogen dioxide and hydrofluoric acid, are discharged into the air without any least treatment.

Pak-American Fertilisers, Daudkhel, District Mianwali, generates 328 cubic metres per day of waste water. Pak-Saudi Fertilisers, Mirpur Mathelo, manufacturing around 46,420 metric tonnes per month of urea, produces around 3,050 cubic metres per day of waste water, which after minor treatment is disposed of into an irrigation canal.

Around 120 small size tanneries in Kasur near Lahore are discharging into the sewage and on the virgin land about 23,000 cubic metres per day of highly toxic effluent. It has even chromium. About 45,000 industrial units working in the province of the Punjab discharge around 550 tonnes of bod per day into the water bodies. A variety of industries from smaller to bigger ones are producing huge quantities of wastes, which are discharged indiscriminately into the water bodies on soil and into the air without even the least treatment. Due to the sitting of small scale industries within the cities, especially dealing with metal finishing, are discharging their highly-polluted waste waters into sewers without treatment.

Automobile, mechanical and other workshops discharge highly toxic spent oils into civil sewage through rain-water and domestic waste waters, spilled so frequently into streets due to lack of sewage facilities in many parts of the cities. As such, the so-called sewage is now no more so in the true sense. Hence the sewage has adopted the character of a blend of industrial effluents and sewage in which form it is very toxic.

The city of Karachi generates around 550 million litres and Lahore about 340 million litres per day of sewage mixed with industrial effluents. The sewage is discharged, at convenience, into the nearby water bodies without treatment.

The total emissions during 1987-88 were carbon dioxide 104.99 million tonnes, carbon monoxide 3.57 million tonnes, sulphur dioxide 0.59 million tonnes, hydrocarbons 0.37 million tonnes, and lead 520 tonnes.

Their magnitude in the year 2000 would be about 2.5 times more.

Vehicles: The report says that vehicles ply on roads in Pakistan beyond their economic life without proper tuning or maintenance. They use adulterated fuel. Consequently as the combined effect of these factors, a

normal car in Pakistan releases about 20 times as much hydrocarbons, 25 times as much carbon-monoxide and 3.6 times as much nitrous oxide as a normal car in the United States.

Due to industrial pollution, lots of economic losses have already occurred to the country. As a consequence of the high pollution load in the River Ravi, the fish catch has been reduced by about 5,000 tonnes per annum. Similarly, due to the colossal discharges of high toxic industrial wastes in Dek nallah—a natural water body near Lahore about four million kilograms of fish catch per year have been completely lost. Because of the heavy discharges of wastes into the coastal water, large quantities of fish have already migrated to other places away from this part of the coastline.

Pollution of Coastal Area Waters Deplored

92WN0427A Karachi DAWN in English 7 Mar 92 p 13

[Editorial: "Threat to Coastal Areas"]

[Text] A sea water sample sent to London for laboratory testing was returned with the remarks that it was not water but untreated sewage, says a study done by the NED University of Engineering and Technology, Karachi. The study also shows that marine life off the Karachi coast is fast becoming extinct and the species that still exist there are contaminated with lead. This lead enters the human body through sea-food and causes killer diseases like anaemia, kidney failure and brain damage. A shocking comment on the state of Karachi's coast! One had always suspected that the coastal region was badly polluted but certainly not to an extent that would seriously threaten marine life. Evidently, official indifference to the environmental degradation is responsible for bringing things to such a pass. It seems that the authorities have neither the desire nor the will to fight the increasing pollution of the coastal areas.

Coastal pollution is nothing peculiar to Pakistan; coasts all over the world are increasingly threatened by environmental degradation. But in many cases, they are saved through human efforts at cleaning up and prevention and preservation. However, one hardly sees or hears of any such efforts here. As a result marine environment is being so adversely affected that today there is a

marked deterioration in the quality of shrimps and other species of fish which are a major source of our foreign exchange earnings.

There are many factors responsible for the growing pollution of our coastline. For instance, untreated waste from factories and sewage drained into the sea; oil spills from ships and fishing trawlers visiting Karachi and Bin Qasim ports; and unchecked littering of the beaches by picnickers and holiday-makers. All these combine to pose a very real threat to marine life. The situation has become so dangerous that it is feared that if immediate preventive and control measures are not taken, some species of fish and other forms of marine life such as sea grass, soft coral beds, oyster beds and so on may become extinct in course of time. Even the mangrove forests which not only provide safety to Sindh's various creeks from sea erosion but are also a major source of sustenance for a large number of fishermen, are now threatened by pollution. The situation demands a thorough study of the ways and means to arrest the increasing coastal decay and degradation. If appropriate measures are taken well in time, there is no reason why the menace cannot be controlled before the situation worsens beyond redemption.

Karachi Nucler Plant Can Continue To Work Until 2012

BK2504183492 Peshawar THE FRONTIER POST in English 25 Apr 92 p 5

[Text] Karachi (PPI)—Karachi nuclear power plant [KANUPP] can continue to operate economically up to 2012, ten years beyond its original design life, provided that the sale price of electricity produced by KANUPP is revised up to commercially competitive rates.

According to KANUPP sources the government provides some grant for improving the safety towards current standards and Canadian support remains available at least for the safety relevant improvements.

The replacement of all life limiting equipments is technically feasible, KANUPP meets its present mandatory safety targets, but significant design improvement are needed in the next few years to meet internationally acceptable current safety standards.

Ecological Conference of CIS, Baltic States Ends

LD2404130692 Moscow *ITAR-TASS in English*
1333 GMT 23 Apr 92

[By ITAR-TASS correspondent Dmitriy Gornostayev]

[Text] Moscow, April 23—The two-day "Conference on Problems of Interaction of Independent States to ensure Ecological Safety," organized on the initiative of the Peace and Concord Federation, ended its work today. It was the first of the planned series of consultative meetings of scientific and public organization experts and scientific representatives from CIS countries and Baltic states, in which about one hundred delegates from 10 republics of the former Soviet Union took part.

Apart from issues of coordination of ecological problems solution within the framework of the CIS and Baltic countries, a citizens' treaty of independent states of the new Commonwealth on ecological safety was also discussed, the draft proposal of which contains "the code of conduct for individual citizen and government" in the ecological sphere.

"To our regret, military and political problems occupied first and foremost place of late, and questions of ecology remained in the shade," the Executive Secretary of the World Peace and Concord Foundation, Grigoriy Lokshin, told ITAR-TASS. "After the disintegration of the Soviet Union the common ecological policy of republics vanished, at a time when in the common ecological space common difficulties were left behind. This led to a stoppage of work on most important projects of saving the Aral and the Caspian Seas and the normalization of the Chernobyl disaster area. That is why we would like to create an interstate body capable of influencing the ecological situation in the new Commonwealth. We will put this proposal before the heads of the Commonwealth of Independent States during their forthcoming meeting in Tashkent."

Ecology Minister Previews Rio Conference

92WN0532A Moscow *ZELENYI MIR in Russian*
No 13-14, Apr 92 (signed to press 9 Apr 92) p 3

[Report on interview with Doctor of Economic Sciences V.I. Danilov-Danilyan, minister of ecology and natural resources of the Russian Federation, by ZELENYI MIR correspondent Nikolay Tereshko; place and date not given: "KOSR-92: Two Hundred and Fifty Brackets"]

[Text] [begin boxed portion] The UN Conference on the Environment is scheduled for June of this year. It will be held in Rio de Janeiro, Brazil. The last ecological meeting on this scale was held 20 years ago in Stockholm.

Over the past years, in the unanimous opinion of world scientists, we have not managed to solve a single global problem. But we have managed, as they say, to "aggravate the problem": Mankind, looking more intensely and

attentively into his future survival, can foresee imminent ecological disasters and catastrophes.

What awaits the specialists at the forthcoming meeting—this and other questions of ZELENYI MIR correspondent Nikolay Tereshko are answered by the minister of ecology and natural resources of the Russian Federation, Doctor of Economic Sciences V.I. Danilov-Danilyan.[end box]

Mankind has undoubtedly made progress in solving global ecological problems in recent years. Specialists are alarmed by an expected change—a warming of the climate under the influence of anthropogenic factors, the main one being discharges into the atmosphere of gases that produce the greenhouse effect, mainly carbon dioxide, which is emitted in practically all combustion processes. The problem here is, at minimum, to keep the discharge of greenhouse gases into the atmosphere at the present level and in time to try to reduce it. This task is fairly modest, but even it is being blocked by very complicated problems having to do with the growth of the population in developing countries and the justifiable aspiration of politicians to raise the standard of living of billions of people. The two are linked in a progression to the growth of energy consumption, that is, the production of energy with the further use of motor vehicles, the expansion of industrial and agricultural production... With everything that will inevitably increase the volume of discharges of gases that produce the greenhouse effect.

Of course, one can try to reduce discharges of gases while maintaining the present level of energy production. Or one can try to raise energy production while retaining today's level of discharges. In both cases it will be as a result of introducing new technologies. Even, for example, in thermal energy engineering. But, let me emphasize, this is still possible. Scientists and technologists have not yet assimilated the reserves, which are fairly insignificant in the energy economy of postindustrial countries. But these reserves are extremely significant in the CIS countries, Eastern Europe, and developing countries.

Another direction for technological transformations is the transition to new methods of producing energy. The main one among them is atomic energy, which is fully provided with raw material, and in European countries and the United States it is highly technological and reliable. But in recent years it has been developing extremely slowly because of the strong fear of radioactivity—the population of many countries do not believe in its safety, particularly after the Chernobyl disaster. Although the reliability of nuclear power plants of France and Germany cannot be compared, of course, with that of the Chernobyl nuclear power plant and other nuclear power plants located on the territory of the CIS countries. The fear of radioactivity is fairly strong even in Germany, where not a single nuclear power plant has been constructed for several years now. Incidentally,

proponents of this path of development of energy engineering are developing new versions of nuclear power installations—in which accidents like that at Chernobyl or any accidents at all, because of internal factors, are simply impossible. These reactors are provided with very reliable internal safety systems.

Hydroelectric energy? The reserves of hydroelectric energy on the planet are not very great and—the main thing!—ecologists have too many substantiated objections to the construction of hydroelectric power plants. Several years ago doubts were cast on the expediency of constructing hydroelectric power plants on flat lands—primarily because their water reservoirs flooded immense territories whose biological potential was much greater and more valuable than the energy potential of the hydroelectric power plants that were being constructed. An example is the Volga hydroelectric power plant cascade. In the long term the existence of these plants is unthinkable. Now there are many objections to constructing large electric power plants on mountain rivers. Each such project requires very careful ecological research, whose results turn out to be extremely negative in the majority of cases.

A typical feature of other renewed sources of energy—solar, wind, geothermal—is that their capacities are inadequate for the needs of the corresponding regions. In certain cases they are capable of satisfying local needs of extremely local territories. Moreover, solar energy, for example, is extremely metal-intensive, and even developed countries cannot afford to develop it.

The conclusion: In the foreseeable future all our hopes for developing the economy and improving the well-being of peoples of developing countries are linked to thermal energy and improved nuclear energy.

But just to retool sources of thermal energy in order to reduce discharges of gases producing the greenhouse effect or even to stabilize their quantity at the present level with an appreciable increase in energy production would take immense expenditures, which would be within the capabilities of only a few postindustrial countries, whose economic potential would not suffice for the entire world. And, frankly, these countries are not burning with desire to solve these problems.

There is, true, one more extremely enticing method of intervening, say, cautiously in the optimization of the processes of warming of the world climate. This is a solution to the problem “from the opposite direction”: to be concerned not about reducing discharges of gases that produce the greenhouse effect but about accelerating their absorption, above all by the forests. According to the calculations of German investigators, this is a very advantageous area of research. Expenditures on the restoration of the forests of Russia, improvement of care for them, and efficient use of the growth of timber seem more modest in the calculations than do expenditures on movement in all other directions, taking into account, of course, reimbursement for these expenditures in the

future with products of wood processing. This idea is now being discussed actively. Ecological goals are well combined with economic ones here.

The next global ecological problem is the destruction of the ozone layer and the formation of so-called “holes in the ozone” through which ultraviolet rays, with their extremely negative effect on everything living, penetrate to the earth's surface. The majority of scientists are convinced that the main reason for the destruction of the ozone layer of the earth's atmosphere is the freon used in refrigeration equipment and certain other aggressive gases. For example, methane, which is emitted in immense quantities from our intercontinental gas lines. The path to solving this problem lies in rejecting technologies with which ozone-destroying gas is either produced or utilized. A special program for gradually refraining from the use of these technologies was quietly put to rest in our country—we are not prepared to refrain from the use of freons. We are prepared, however, with the help of developed countries, to improve our gas lines, improve their service, and react more promptly to accidents involving the leakage of gas.

Another global ecological problem is that the diversity of biological species is decreasing. As a result of the growth of the population and the intensified development of industrial and agriculture, the earth, according to certain quite accurate data, loses up to 100 different kinds of living beings each day. I emphasize—each day!

Why, one asks, do we need such a colossal diversity of species of living beings, when significant losses are not even especially noticed because we do not experience them in our daily lives? After all, man actually uses very few biological species for his own needs and the rest of them seem to be ignored. But this is a need of life. The diversity of species of living substances is the potential for the development of life on earth, where this development never has taken place and never will take place through man alone. All of nature, the entire biosphere, is developing. And the potential which preserves its adaptive capabilities is provided namely by the diversity of species. Its impoverishment could lead to a situation where the entire biosphere would begin to be degraded. Especially with changes in the conditions for its existence, including under human influence. The preservation of the diversity of species requires the implementation of a complex of extremely diverse and capital-intensive measures conducted in a coordinated way in all countries of the world, and by no means in just a few of the richest ones. And this is also a serious concern of the world community and at the same time a source of disagreements among various groups of countries.

Ecological problems have become dominant in international relations in recent years. After the military threat between East and West receded into the background, the process of disarmament got started, and serious concerns that it might suddenly come to a halt disappeared, while ecological problems came to the fore. Of all the threats to our existence, it was the ecological threat that mankind

began to fear most of all, and there appeared a critical need to coordinate and harmonize the actions of many countries.

First of all, it seems, we must change our perception of the ecological problems themselves—we must educate people in such a way that they have a sense of how real and powerful the imminent ecological threats hanging over our world are. We must show people the real sources of these threats and teach each individual and all mankind to sacrifice economic blessings for the sake of ecological well-being. Blessings which have been achieved or are achievable. You see: calculate, demonstrate, teach... We need millions of well-trained, dedicated, energetic, and patient apostles of this new faith who are capable of convincing the "heathens" by word and deed. And we need hundreds of billions of dollars.

Developed countries with immense economic potentials are prepared to share their wealth but not to the extent to which developing countries would like to participate in their profits and revenues. And developing countries, in turn, are not at all inclined to spend their own sources of capital on the ecology, assuming, not without justification, that this is the responsibility of the developed countries.

The developing countries have presented for consideration a concept of the ecological blame of the developed countries before the rest of the world: The high level of well-being achieved by the developed countries was brought about primarily by extremely intensive exploitation of the natural resources of the entire globe—not only and not so much their own national resources as those that lie far beyond the borders of their territories. But even if the developed countries had used up their own forests, would this not have affected other countries and peoples?! The entire balance of the gases that produce the greenhouse effect in the earth's atmosphere depends on the size of the area covered by forest in an individual country. Proceeding from this conception of ecological blame, the developing countries are demanding from the developed ones significant capital investments in the ecological improvement of the entire planet. And above all on the territories of the developing countries themselves, which have suffered from ecological expansion.

Local ecological problems—say, polluted waste waters and discharges into the atmosphere—have been solved in postindustrial countries. This certainly does not mean that there is nothing to be done in the area of ecology there. Certain problems have not been solved yet. But they are tasks, particular issues, and not general problems such, for example, as those generated by the intensive development of the economy in foreign countries. Therefore the developed countries are prepared to share their capabilities for the sake of achieving general ecological well-being only to a certain degree, and by no means the degree to which the developing countries are making their claim. They are prepared to make certain direct expenditures, but, in the first place, they are

modest in comparison to the real requirements of the programs that have been developed for protection of the environment, and, in the second place, it is under the condition that the expenditures be made under strict international supervision. But the developing countries are demanding: Give us more money and the right to spend it without any supervision whatsoever. It is clear what they are counting on: Funds allotted directly could be spent under various covers to achieve goals other than purely ecological ones. For instance, for a direct and appreciable improvement of the standard of living of their people. And long, complicated, and boring diplomatic proceedings develop around this dispute...

When the conference in Rio de Janeiro was just being conceived, it was intended through the efforts of the world community to develop a mechanism for solving a number of global problems. But as time goes by it is becoming clear that there is little chance that these fine hopes will be realized. Possibly documents of a general nature will be signed, like the "Ecological Declaration" or the "Agenda for the 20th Century," which proclaim new concepts of relations between man and nature, determine the priorities for ecological survival, and designate the most important ecological measures—which are of concern to the whole world community. But even now it is clear that there will be no mechanism for executing these programs.

Who will participate in what, in what form, and at whose expense?—developed and developing countries oppose one another in searching for answers to these questions. Until recently there were approximately 350 disputed questions. In February 250 of them remained, and they are not likely to be "settled" before the beginning of the conference. Most likely the disputed questions will be placed in brackets—in international diplomatic practice that is what is done with questions they cannot avoid at the given time and which it is impossible to resolve.

There is no doubt that the conference will take place. Only the times will change a little, and ZELENYI MIR has already reported that. It was assumed that our—at that time Soviet—delegation would consist of 100 people headed by the president of the USSR. Now that the USSR is no longer to be found on the map of the world, it is not clear who will be in charge of the delegation from Russia. The only thing that is clear is that it will include no more than 20 specialists—we do not have the money for any more.

The conference will not turn ecological practice around—everything will remain more or less as it was. But it could turn the international community toward a more attentive and responsible attitude toward global ecological problems, and that is already a good deal.

Russia's Efforts on Ozone Problem in Budgetary 'Hole'

92WN0461A Moscow ROSSIYSKAYA GAZETA
in Russian 18 Apr 92 p 8

[Article by V. Khattatov, deputy director of the Central Astrological Observatory, and A. Shuvalov: "Who Is To Plug the Ozone Hole?"]

[Text] The ozone hole is growing bigger at a rapid rate. In March over the northern part of European Russia, Siberia, and Yakutiya, the amount of ozone in the atmosphere dropped to a record low.

Although the hypothesis that fluorocarbons and freon gases, widely used in industry as well as domestically, might seriously damage the ozone layer was proposed initially almost 20 years ago, reports of dramatic losses of ozone over the Antarctic first appeared 11 years later. The discovery of this phenomenon, which was christened "the ozone layer," created a scientific sensation.

A reduction in the overall ozone content of the atmosphere brings about a perceptible increase in harsh ultraviolet radiation from the sun, which in turn may lower the productivity of vegetation and increase a number of illness in human beings, such as skin cancers and eye cataracts.

This winter brought the first evidence of a dramatic lowering of the total ozone content over the polar region and mid-latitudes of the Northern Hemisphere. By December it was becoming obvious that something ominous was occurring after the "thickness" of the atmosphere over Scandinavia and Northern Russia decreased an average of 10 percent. During January and February the apprehension of scientists increased as the area with a decreased ozone content, now in the range of 15-20 percent, reached several million cubic kilometers. Over St. Petersburg, Riga, Archangelsk, and Moscow, monitoring stations of Roskomgidromet [Russian State Committee for Hydrometeorology] recorded record or near-record lows in the ozone content of the atmosphere.

The fact that concerns scientists the most is that the depletion of the ozone layer is occurring at an ever-increasing rate. Confronted with a genuine threat of ecological catastrophe, the entire civilized world has begun to accelerate the schedule for curtailing production of ozone-destroying materials. And what about Russia? During the period 1987-1990 two major science and technology projects were launched in Russia: the first to investigate the ozone layer; the second to devise new ozone-preserving technologies. The problem of funding these projects, however, has not been resolved to this day. It is apparent that the hole in the budget is of greater proportions than the one in the atmosphere.

Meanwhile, we have accomplished a good deal in working out new and competitive technologies for the production of ozone-preserving materials. Because of the

lack of financing, however, there has been a marked lag in the progress of Russian research.

The practical consequences of falling behind in this race to save the earth's ozone layer—one aspect of which is keen competition for new domestic production markets—may prove to be extremely unfavorable for Russia and other countries of the CIS.

It is submitted that the government of Russia should come to agreement with the governments of the sovereign states of the former Union on a policy to support both the scientific program to investigate the ozone layer and the program to develop new ozone-preserving technologies; for neither one of these two dimensions of the problem can exist without the other. Only a reliable system of monitoring the condition of the ozone layer can forestall the possibility of the state program's becoming just another propaganda campaign or, even worse, the next public feeding trough.

Process of Preparing Russia's New Environmental Law Described

92WN0464B Moscow SPASENIYE in Russian
No 8, Mar 92 p 1

[Article by Yu. Michurin: "Nature Under State Protection"]

[Text] The Parliament of the Russian Federation has adopted a Law on Environmental Protection. It will go into effect as soon as it is signed by the President.

We have asked its primary author, Doctor of Juridical Sciences and MGU Department Head Viktor Petrov, and Deputy Chairman of the Committee on the Ecology of the Russian Supreme Soviet, Valeriy Menshikov, to describe how the work went on this long-awaited legislative document.

[Menshikov] We all understood full well that Russia cannot get along without an environmental protection law; the moreso, since many of our citizens already live in places which equate to ecological disaster zones. Therefore, we believe that providing the conditions for the most expeditious adoption of a fundamental law on protecting the natural environment, work on which has gone on for a more than a year, is one of the committee's chief tasks. And now this law has finally been adopted. We must continue to build a legislative natural resource base on its foundation. The first bricks of this base have already been laid. Parliament is discussing a draft law on mineral deposits, which has, incidentally, aroused increased interest among members of the Supreme Soviet and the Government. Work on forest and water codes is at the stage of completion.

I believe it is important to note that our basic environmental protection law has received approbation at the international level. It was reviewed by American jurists and ecologists. In principle, that is the way it should

be—any one of our draft laws should take international experience into consideration.

[Petrov] Actually, we began work on the draft of this law two years ago, while still on a commission of the union parliament. True, the draft then was lost somewhere in government offices, and we returned to it at the beginning of the work of the reformed Supreme Soviet of Russia. Many parts of the draft previously worked out were acceptable; however, the law also has to consider the reality of the present day, and the prospects for the future. Therefore, we also turned our attention to the threat of coming ecological crisis, as well as the transition to new economic reform, and regulating the relations between sovereign states.

We did not set ourselves the task of making this law pleasing to everyone. And it was not accepted unanimously at the session of the Supreme Soviet. Had it not been for the active position of a number of deputies, and the firmness of the Committee on the Ecology itself, it is entirely possible that the law might not have been adopted to this day. After all, what is the primary characteristic of this legal document? Primarily, concreteness. For example, it describes in detail the liability for violation, and describes the mechanism for paying damages.

On the whole, the entire law is oriented toward market relations. We upheld the principle of a scientifically-based combination of economical and ecological interests, without primacy of one over the other. The economic self-interest of an enterprise or subject in the question of environmental protection is of paramount importance. But, on the other hand, the law also indicates administrative-law methods of influencing those who harm the environment.

The basic mechanism of action of the given law is contained in the normatives of the quality of the environment. These indicators characterize the maximum allowable level of radiation, noise, quantity of harmful substances in products, and so on. These normatives are not, of course, constant, but are re-examined and confirmed by the appropriate organ.

[Menshikov] Incidentally, developing such normatives among other agencies is also the responsibility of the Ministry on the Ecology and Natural Resources, which must also determine policy in questions of the quality of the environment, and estimate the effects on nature of one source of pollution or another.

[Petrov] There is yet another, in my view, very important section in the law, which spells out the rights and obligations of our organs of government, starting from the Supreme Soviet and ending with the organs of local self-government. In accordance with the law, our citizens, who according to the law have the right to a healthy and favorable environment, will also have someone to turn to if their rights are violated.

And we too will finally have someone at the state level to protect nature.

[Menshikov] Now the task consists of establishing civilized relations between the state and the individual on the basis of the new law.

[Petrov] But we must also take into consideration the fact that in and of itself the law will not begin to operate, if the institutes of power are not restructured. Restructuring of the judicial system and changes in the activities of the public prosecutors are needed. In a word, the law will be effective only in complex with the solution of economic, political and educational problems.

[Menshikov] That's right: we must not content ourselves with the fact that we have created a law. We must be morally prepared to bear the responsibility for preserving the environment, which we ourselves are a part of.

Vorontsov Campaigns for Nuclear Moratorium

92WN0432A Moscow KOMSOMOLSKAYA PRAVDA
in Russian 8 Apr 92 p 4

[Article by O. Volkov: "Aborigines Like Our Minister of Ecology"]

[Text] As we have already reported, Nikolay Vorontsov, the only minister of ecology in the entire history of the USSR has returned home, expelled from French Polynesia for participation in a "Greenpeace" action—a raid on a nuclear test site in the Mururoa atoll.

More than 150 nuclear explosions have been conducted in the Mururoa and Fangataufa atolls. Since 1972, in an attempt to achieve a prohibition of nuclear tests, Greenpeace has carried out a total of eight raids on the islands of French Polynesia.

Our correspondent met Nikolay Nikolayevich at the airport and asked him to tell what he had been up to.

"The goal of our action was to convince the French government to join a moratorium on nuclear arms tests. The next series of French explosions is supposed to be in May and June. It was our intention to force our way to the shore and establish a symbolic camp of peace.

"I enjoyed completely equal rights as a crew member on board the vessel "Rainbow Worker 2." They have total democracy there and I washed dishes when my turn came. But, in general, I was in the scientific group.

"Our task was to show that the first explosions—in the atmosphere—inflicted enormous harm to the natural environment. Since 1975 the French have refrained from atmospheric detonations and have been carrying out what they maintain are non-dangerous explosions beneath the atolls. We took samples. If caesium-134 is found in them, this will be evidence of leakage.

"Incidentally, the French authorities believe we were unsuccessful in obtaining samples of the water and corals in Mururoa itself and its immediate area. I do not want to upset them, but I, for example, very strongly doubt this. . . ."

The military frigate "Lieutenant Lavale" escorted the Greenpeace ship from the capital of French Polynesia, Papeete. The French authorities declared that they would not allow the ecologists to land on the atoll. True, they did propose a compromise solution: Certain representatives of Greenpeace could visit the test area, but in the capacity of tourists and under guard.

In 1985 French secret agents sunk the "Rainbow Worker 1" in New Zealand, when the vessel was preparing for a similar mission.

On this occasion also, Greenpeace rejected compromises.

"A whole fleet of five ships, headed by a vice admiral, was sent against the small sailing vessel," Vorontsov continues. "A bunch of helicopters, commandos. But, nevertheless, we went into the forbidden 12-kilometer zone. From here, everything was like in a classic skirmish: a boarding operation, people in masks, a check of documents. Our military people might learn something [from it]. Despite the masks and weapons, the French conducted themselves very gallantly: there was no beating, no shoving. For which, incidentally, they nearly paid a price.

"Greenpeace is skilled at amphibious operations. A ship distracts its escort and, while this is happening, they lower rubber motor boats, which rush headlong for the shore. I am not a young person, and, as you yourselves will understand, the situation then was . . . In brief, I did not get into a boat. They had nice, young girls there. This is a strength of Greenpeace—they practically talked the soldiers and officers, who had come to arrest them, out of it. . . .

"But they did arrest us nevertheless. And they began to send us off on the very first planes, irrespective of their destination.

"The aborigines greeted us like heroes: They hung garlands of flowers on everyone and, in the evening, arranged a concert in our honor."

Admiral Francois Keri happily announced to the journalists that "violence had been successfully avoided" and arranged a dinner for the ecologists and the journalists in order to "relieve the tension."

The French Minister of Ecology made a special statement, in which he condemned his own government and supported the Greenpeace proposal to declare a general moratorium on nuclear testing.

They brought the "Rainbow Worker 2" into the harbor in order to secure the ship against tropical storms. And

later they let it go entirely. The only emergency situation aboard the ship—were the captain's toothaches. . . .

"Why is it necessary to halt nuclear tests immediately? Test sites can now be counted on the fingers of your hand. Because there are not many nuclear powers. It is clear that, in the next two or three years, the nuclear club will expand, and this means that large areas may come under the threat of radio-active contamination.

"Following the congress, as a deputy, I plan to address a session of the Supreme Soviet. We need to call on other countries to associate themselves with our moratorium. Its term expires in October, but, it seems to me, that we should fight for an extension. True, the nuclear lobby in the government is now very strong and is putting pressure on Yeltsin to continue to conduct testing on Novaya Zemlya.

"Incidentally, this is one of the few test areas where I have never been."

Rostov Group Works To Prevent Startup of Nuclear Station

LD1904114292 Moscow Radio Rossii Network in Russian 0900 GMT 12 Apr 92

[Text] Here is a report from Rostov-on-Don: The Rostov power station will not be built yet. This decision was made at the small soviet of the Rostov oblast soviet, but the Rostov oblast Civic Revival [grazhdanskoye vozrozhdeniye] organization thinks it is too early to be calm. Correspondent Aleksey Loktionov reports:

[Correspondent] Members of the small soviet of the Rostov oblast soviet examined three versions of the program for the development of power engineering in the oblast elaborated by Rostov Energy. Two of them provided for starting up the Rostov Nuclear Power Station. However, the oblast session came out in favor of ending the construction of the Rostov Nuclear Power Station. There are still not any official conclusions yet from the panel of ecological experts. In connection with this, the small soviet decided to reject the proposal by Rostov Energy connected with the construction of the nuclear power station and to approve the version of the program that provides for the construction of generating sources run on organic fuel.

The appeal adopted by the Rostov city Civic Revival organization in this connection notes that recently a deliberate campaign has been waged in the mass media to rehabilitate the Rostov nuclear electric power station; moreover, lies and falsifications regarding its reliability and harmlessness are being brought into play. In connection with this, the Civic Revival movement proposes that protest rallies be held on 26 April or 3 May, on the occasion of the sixth anniversary of the Chernobyl disaster, against the construction of the Rostov nuclear electric power station and that demands be made to the Russian leadership to ban its starting.

First Joint Conference of Nuclear Power Plants, Local Authorities Held

LD0105173392 Moscow Radio Rossii Network
in Russian 1100 GMT 25 Apr 92

[Report by correspondent (Denis Gurinskiy) on an all-Russian conference of directors of nuclear power stations and the authorities of satellite towns around those stations, held in Sosnovyy Bor in Leningradskaya Oblast; date not given]

[Text] This was the first joint conference held on such a scale by directors of Russian nuclear power stations and leaders of the towns near which they are based. The aim of the conference, called under the auspices of the Russian Atomic Energy Ministry and the management of the Leningrad nuclear power station, was to dispel the tension that has arisen between nuclear power engineers and local authorities.

At the conference, representatives of the nuclear power stations voiced concern that since a series of accidents at Russian nuclear power stations, local authorities are putting them under ever greater financial and legal pressure to cut back the stations' operations.

In particular, they pointed out that the authorities have recently been demanding that the stations pay higher taxes to the local authorities, while reducing subsidies for social and economic aid programs for nuclear power station personnel. In the opinion of the directors of Russia's nuclear power stations, the only way to deal with these problems is to adopt a law on nuclear power engineering covering the whole of Russia.

On the other hand, the officials of local administrations and soviets attending the conference spoke of their dissatisfaction with the stance taken by the management of the nuclear power stations, who they accused of systematically violating the ecological safety rules of the nearby territory and even refuse afterwards to help the local authorities clear up their discharges. According to the heads of the local authorities, the nuclear power stations in their towns regard themselves as something approaching a state within a state, and this provokes the local population to demand that the authorities take a tougher line in their dealings with the nuclear power engineers.

However, despite these polarized views, the conference did not block a decision to set up a union of nuclear power engineering towns of Russia [Soyuz Gorodov Atomnoy Energetiki Rossii]. The union brings together the managers of 11 nuclear power stations and local authority representatives from over 20 towns in Russia to work jointly on drawing up a bill covering nuclear power engineering in Russia, and to consult each other regularly on all aspects of the operations of nuclear power stations.

Russia's Ecological Coordinating Council Holds First Session

92WN0439A Moscow SPASENIYE in Russian
8 Mar 92 p 2

[Article under rubric: "Official: First Sessions of the Ecological Coordinating Council"]

[Text] The Supreme Council of the Russian Federation set before the President and the government the question of optimizing state administration in the area of environmental protection and the use of natural resources during the period of changeover to the market.

This, then, was the topic that became the object of discussion at the first session of the Coordinating Council, which was held on 16 January. Those present agreed in the opinion that the existing structure of state administration in the field of ecology makes it impossible to guarantee the effective use of natural resources. Moreover, the predominance of the production interests of economic entities under market conditions leads to the unsupervised destruction of natural resources and the worsening of the already complicated ecological situation in Russia. It was also noted that today the government is having a large amount of difficulty in resolving critical ecological problems. The Coordinating Council adopted a decision to send the President a recommendation to create, as part of the government, an ecological-resources bloc headed by a deputy chairman of the government, a minister of ecology and natural resources. At its second session (18 February) the Coordinating Council considered the question of improving governmental monitoring of the use of natural resources, a question which had been prepared by the resources committees of the Ministry of Ecology and Natural Resources jointly with the Committee on Land Reform and Land Resources under the government of Russia and the Ministry of Agriculture's Committee on the Fishing Industry. It is proposed that the next topics for sessions of the Ecological Coordinating Council will be:

- the elaboration of a national ecological strategy;
- the condition and prospects for developing a system for monitoring the environment and the public's health;
- preparation for the United Nations Conference on the Environment and Development;
- a concept of ecological security;
- the ecological section of the Konversiya [Conversion] program;
- legal support of ecological policy;
- ecological policy in the area of the protection of health, energy engineering, and agriculture.

In the opinion of the members of the Coordinating Council, the possibility of the free exchange of opinions at the session and simply the regular meetings among the

state figures who are united by the unity of the goal—the guaranteeing of the ecological security of Russia—will undoubtedly be of advantage in resolving very complicated ecological problems.

[Signed] V. Karasev, head of the working group of the Ecological Coordinating Council under the President of Russia

New Ecological Journal Published

92WN0437B Moscow ROSSIYSKAYA GAZETA
in Russian 19 Mar 92 First Edition p 8

[Article by Mariya Nikolayeva: "EKOS Informs You"]

[Text] The second edition of the journal EKOS will appear soon. This independent publication is a member of the Social-Ecological Union and brings together not only Russian environmentalists but also their colleagues in other countries. The journal is supported abroad by such major international organizations as Greenpeace, Alternative and Environment, the World For Our Future Center, and Norway's Bellon Foundation.

In June of this year, the journal will be presented at the UN Conference on the Environment and Development and the world meeting of environmentalists in Rio de Janeiro.

Moscow Pollution Monitoring Station in Jeopardy

PM1504151192 Moscow Teleradiokompaniya
Ostankino Television First Program Network
in Russian 0810 GMT 11 Apr 92

[From the "Ecology Chronicle" program: Video report by unidentified correspondent; figures in brackets denote broadcast time in GMT in hours, minutes, and seconds]

[Text] [082057] [Video starts with aerial view of road at night] [Correspondent] So, we move onto Preobrazhenskaya Square. Here a 27-story apartment block houses Moscow's only laser atmospheric pollution monitoring station. The laser beam passes high over the apartment blocks to reach a mirror fixed 2 kilometers away on the roof of the Institute of Global Climate and Ecology. It is reflected and goes back to the station.

[A.N. Nikolayev, senior scientific staffer, identified by caption] The wind mainly carries pollution over the roofs of the apartment blocks. The winds in Moscow are mainly from the west. Consequently, it is highly likely that pollution from throughout the city is taken to the station.

[Correspondent] What have the readings shown? A more or less favorable situation with carbon monoxide. Although at intersections near traffic flow it may exceed safety levels. On the other hand the nitric oxide safety level is exceeded by a factor of five in summer and by a

factor of three in the winter. Only at night is the concentration of nitrogen dioxide less than the maximum permissible level.

What impact do these readings have on the state of affairs in Moscow? Are any steps being taken?

[Nikolayev] Our committee, the USSR State Committee for Hydrometeorology as it was called in the past, submitted reports. Everything went into annual roundups which were then published, but they have hitherto had no effect on operational work.

[Correspondent] The laser monitoring station is now threatened with closure. The owner of the apartment block has demanded roughly 1,000 rubles per square meter for the lease of the attic. Ecological organizations in our country are generally poor. Who will help them survive the transition to the market? [video shows highway at night, laser equipment, map of Moscow, pollution graphs, ending with highway at night again] [082227]

St Petersburg Not Able To Cope With Pollution Control Standards

92WN0461B Moscow RADIKAL in Russian
No 10, Mar 92 p 11

[Article by Leonid Shtivelberg under the rubric: "Ecological Imperative": "Without Regret Let Us Pour the Water, Without Thinking Let Us Drink, and Then..."]

[Text] St. Petersburg—The ecological situation in St. Petersburg and the oblast is one of the most popular topics of discussion in the mass media, and in various commissions and conferences, as well as in private conversation. More often than not, however, it is radiation that is discussed. Inexplicably, more rarely, the concern expressed is about ions of heavy metals—one of the gravest of risk factors in the environment of the city and surrounding oblast. Ions deserve this "honor," first, because of their high toxicity (a causal agent for genetic changes), and, second, by virtue of their ubiquity; for almost every enterprise in the city has a workshop for galvanizing, or etching, or some kind of production site involved in the surface treatment of metals.

Good Intentions

Nowhere in the world are there such strict requirements for the purification of industrial discharges as we have.

The United States (State of Connecticut), for example, has a requirement 1 milligram (mg) of copper per liter; in Germany, it is .5 mg per liter; and in St. Petersburg, .0003 mg per liter. The Americans have set the maximum allowable concentration (MAC) for zinc at .1 mg per liter; the Germans at .5 mg per liter; and health authority in St. Petersburg have set it at .05 mg per liter. Oddly enough, these requirements are sometimes more stringent for industrial drainage than for drinking water. Take chromium, for example. Whereas the World

Health Organization MAC for chromium is .5 mg per liter in drinking water, the "Rules for Industrial Discharges into the Leningrad Sewage System of Leningrad," pursuant to Resolution No. 156 of the Leningrad Soviet Executive Committee dated 27 February 1989, set the MAC for chromium at .007 mg per liter.

Harsh Reality

There is no serially produced equipment available for meeting these purification standards.

There are no instruments sufficiently sensitive to measure pollutants in microscopic concentrations as called for by the Leningrad Rules. For example, enterprises are subject to standards for ions of copper set at .002 mg per liter; whereas the finest instruments in the world can only register reliably .02 mg per liter, and the instruments are in fact used in industrial enterprises (not only in this country but abroad) have a tolerance of .2 to .5 mg per liter—that is, from 100 to 250 times below the level required.

There is no continuous monitoring, and no public monitoring whatever. As a result, between 30 percent and 50 percent (according to various sources) of the city's metalworking enterprises have no functioning purification equipment. Sometimes millions of rubles are spent to build installations, which may include even air-conditioning equipment, but which because of a shortage of parts or absence of materials cannot even be put in operation. In rare instances when enterprises succeed in introducing efficient equipment that can purify water as well as the best found abroad (for example, the LCPO imeni Sverdlov), it still makes no sense for the enterprise to use it since the standards are set so high they are unattainable anyway.

The practical result of making the standards unattainable has been to further the use of the simplest of all methods of "purification," which is by dilution; for it is the concentration, not the amount of the discharge, that is measured. Apart from the evident absence of any ecological advantage to be gained, dilution brings about the additional disadvantage of a sharp increase in the amount of water discharged.

What Is To Be Done?

The procedure incorporated into the Rules is based on the assumption that the total quantity of industrial drainage is a fixed amount, as is the amount discharged by each industrial enterprise. This has the effect of encouraging the enterprises to discharge vast amounts of water (since the payment for excessive discharge is almost a token sum) as they try to avoid dealing with purification problems by simply diluting the amount of drainage. However, by rejecting the maximum allowable concentration as the sole criterion, and by using instead a maximum allowable amount of discharge as the main

criterion, and carefully taking into account water consumption, it is possible to create a situation in which the enterprises will try to reduce the amount of their water discharge.

By using smaller amounts of water, it becomes possible to meet the purification requirements that are today technically feasible. Under these circumstances, the purification unit itself could be relatively compact, lending itself to serial production, and therefore less expensive to build, which in turn would expedite the solution of regional pollution problems.

In other words, it is necessary to start by revising the standards.

Throughout the world experience has demonstrated that well-considered standards set by qualified experts can ameliorate conditions, while ill-considered standards can harm or even ruin everything to do with water purification.

The establishment of standards in this field is as a rule achieved through the collaboration of the democratic government institutions (committees and commissions of the parliament), acting together with the agencies of water management and other municipal services, as well as with representatives of the enterprises responsible for purifying their industrial drainage and other water purification specialists. The standards worked out are in the nature of a compromise. The essential thing is that the standards must be realistic—that they can be implemented in practice under the actual conditions that prevail in the country. At the same time, of course, allowance must be made for the priority nature of these requirements to assure progress in resolving ecological problems.

There is one other obstacle to the solution of industrial drainage purification problems that may be eliminated without any expenditure on the part of city authorities or industrial managers. That is the problem of reaching agreement with the monitoring agencies regarding the design of purification facilities. Under free-market conditions, each enterprise should be entitled to select its own purification technology; for every risk, even the most unusual, rests squarely on the shoulders of the equipment's designer, manufacturer, construction contractor, and the enterprise itself. The enterprise should be required to answer to the monitoring agencies only for the quality of the water discharged.

Finally, a key factor in the problem of purifying industrial drainage will always be basic industrial production.

The surface treatment of metals unavoidably has a deleterious effect upon the environment. In reviewing problems of purifying industrial drainage, it is not difficult to recognize that the place to start in addressing these problems is with basic production. For example, replacing cyanide with an alkali will not only lower the total toxicity affecting the environment while simplifying the purification process. It will reduce five or six

times the amount of sediment formed by purification; and it will reduce four or five times the amount of inactive salts left in the purified water, creating, in turn, conditions for recycling the water. The use of showers and cascading water also help to reduce water consumption. But today the source of the drainage problem (the production of galvanized iron, and the like) is under the direction of the main production engineer, while the purification plant, as a rule, is under the direction of the chief power engineer. But responsibility for the purity of the water may be left entirely in the hands of a special service consisting of pensioners only. Nothing can come out of such a state of affairs but mutual recrimination. The person responsible for the purity of water discharged should be the person who is in charge of the industrial process that uses the water. What is the point in constructing purification plants the design and use of which are complicated many times over by the necessity to recycle from 80 percent to 90 percent of the water (the required standards) when the amount of water used in the process exceeds 1000 percent?

Only a comprehensive approach to the problems of purification will make it possible to arrive at a compromise between the needs of industry and ecology—between standards that are desirable and realistic at the present level of technology; that is, a compromise that will assure the development of production for the good of society, while safeguarding the health of living and future generations.

St Petersburg Area Termed 'Radiation Cesspool'

PM0904110492 Moscow KOMSOMOLSKAYA
PRAVDA in Russian 7 Apr 92 p 2

[I. Potekhina report: "St. Petersburg: After One Big Accident They Have Not Noticed Lots of Small Ones"]

[Text] Following the accident at the Leningrad AES [nuclear electric power station] friends kept ringing me from morning to evening: "What have you heard about the radioactive cloud? Should we evacuate our children from the city?"

There is no need for that, I replied. There was no cloud. The background radiation is normal.

A day later an agitated colleague appeared in the news office and ranted at length that all the newspapers are lying. He said that Intourist hotels have simply emptied and there is a very good reason why consulate staffers are packing their suitcases. He would personally be taking spoonfuls of iodine—to avoid the consequences of being irradiated.

You do not need to take spoonfuls of iodine, I told him. You do not need to take anything at all. The background radiation is normal.

On the third day after the accident the kindergarten received a telephone call banning the kids from being taken outside. My daughter could not go out for a walk.

At the same time, together with all the other children, she received an iodine preparation. And they shut the windows in the rooms in the kindergarten.

Why shut the windows?, I asked. There is no need for this. The background radiation is normal.

But the strength of public opinion is truly great. On the fourth day I shut all the windows in my own apartment and started to think about evacuating my child.

All this is explicable: We are frightened. Our memories of Chernobyl are still too fresh.

Today a number of experts are painstakingly investigating the causes of the accident at the Leningrad AES. The city has announced a competition for projects to reconstruct the station. Applications from firms are coming not only from Europe, which has a vested interest, but also from Canada and Japan. The mass media are vigorously debating the question of what should now be done with Chernobyl-type stations.

The panic surrounding the Leningrad AES will now settle down, the hubbub following this latest accident will die away—and everything will once again remain as it was before. Once again there will be no time for "day-to-day questions." But a quiet and unnoticed accident will gradually flood over the town nonetheless.

For several successive years now St. Petersburg has been turning into a radiation cesspool. Some 200 enterprises in the city make use of radioactive isotopes in one way or another in their work.

However, the storage facility to which radioactive waste is currently taken is practically full. In a year or two there will be nowhere to hide away radiation sources. Even today enterprises are contriving to bury waste on their own territory—within the city limits. And indeed, when the storage facility's resources are exhausted, like it or not they will have to seek out new "in-house" methods of ridding themselves of radioactive garbage.

The Leningrad AES was also forced to start construction of new sections of its own storage facility—it too needed additional storage capacity for waste generated by the production process. And at the same time the old burial facility, which leaks during practically every rainy season, needs patching up.

"Let's not have radioactive dumps under every bush," the scientists implore. "Let's not get involved in a do-it-yourself job! The problem must be resolved in a comprehensive fashion. The city urgently needs a new storage facility—just one, but one that meets all modern requirements."

However, when geologists looked at 14 possible storage sites and concluded that detailed surveys should be carried out in just one of them, the most suitable one, public opinion put up stiff resistance: We won't allow it! It would not even permit boreholes to be drilled in order to investigate the rock.

But time is passing by. The Leningrad AES will have come to the end of its useful life in some 12-15 years' time. What is to be done with dozens of tons of structural materials that have been irradiated for decades or contaminated as a result of leaks? And the main problem is where to put the nuclear fuel that will be unloaded from the AES? There is no storage facility for burying highly radioactive waste in the region. However, the regions that possess storage facilities of this kind are currently refusing to accept waste. This is your problem, they are saying—get out of it how you like, but we've got enough dirt of our own.

Ust-Kamenogorsk Ecological Problems Explored

92WN0435A Alma-Ata KAZAKHSTANSKAYA
PRAVDA in Russian 28 Jan 92 p 2

[Article by KAZAKHSTANSKAYA PRAVDA correspondent A. Akava, Ust-Kamenogorsk: "Four Chernobyls: That Is How Many Catastrophes Independent Experts Feel the People of Ust-Kamenogorsk Have Lived Through"]

[Text] As was already reported by KAZAKHSTANSKAYA PRAVDA, a special session of the city soviet has been held. The people's deputies discussed the results of a comprehensive social and ecological study of the oblast center and the adjacent territories. That work was carried out for the first time, and it took two years—1990-1991—for the commission of experts from the USSR Supreme Council and the Committee of Public Experts to complete it.

The experts' findings, to put it bluntly, astonished the deputies, although it would seem they had had a good idea of the gravity of the misfortune that had overtaken the region.

"Not everyone has the opportunity to learn how many years he has left to live, what kind of death awaits him, what diseases his children will get. But we people here have everything properly pigeon-holed. The picture is a frightening one and also hopeless," N. Ivanov, deputy to the city soviet and a geologist by profession, said. He was obviously upset.

And for good reason. The participants at the session heard a report that stated that at one time the population in the region had been subjected to the radiation effect of 50 REM [Roentgen equivalent man]. During the Chernobyl catastrophe, people who received a dose one-quarter the size of that—11-12 REM—had been evacuated from the zone.

From what test range had these REM hit the inhabitants of East Kazakhstan—the Semipalatinsk test range or the neighboring Chinese one? And why did the departments that have reliable information about this, including the former USSR Minzdrav [Ministry of Health], fail to do anything at that time, and why do they continue to this day to have no desire to declassify their "secrets"? Most

probably they are afraid they will have to answer to their nation, with whom they have dealt worse than with an enemy.

Both for the inhabitants of Chernobyl and the people of Ust-Kamenogorsk who have been studied, the cells that contain the genetic code, according to the experts, have been twisted and broken.

"The health of the city's child and adult population has been steadily worsening and, when judged on the basis of many indicators, has reached a critical point or has passed it, and irreversible changes have occurred in the natural and anthropogenic environment," the experts state.

If one follows logic, those irreversible changes should also occur in man—especially since, as many deputies feel, the attitude toward Rudnyy Altay [Mining Altay] during all the years of the Soviet authority was, and continues to be, colonial policy in its worst form, the goal of which is to dig out of the region as much wealth as possible while giving it nothing in return. The only thing left for the people living here is polluted water, soil and air.

In the north of East Kazakhstan, as though following the order issued by an evil will, the most harmful, most dangerous enterprises are concentrated. It would be nice if all of them operated on local raw materials, but no, those raw materials are brought here from various parts of the world in order to produce metal here and then to send it on its way. For example, the Ust-Kamenogorsk Titanium-Magnesium Combine for many years received raw materials from Zaporozhye and Bereznyaki. But today it is apparently uneconomical to haul the "commodity" distances of thousands and thousands of kilometers, so the metallurgists have found themselves in a very difficult situation.

Those are the results of the "economic economy." Its managers have not invested money either into environmental protection projects or the social sphere, or into the modernization of the enterprises themselves, enterprises that sustained their life for many, many years, including under communism. Today, as a result of this policy the equipment, for example at the zinc-lead combine, is so worn-out and obsolete that if the enterprise were to be privatized, as N. Nazarbayev, President of Kazakhstan, said at one time, it should be given to the collective free of charge.

If things were done right, the obsolete shops should be razed and new ones should be built. But no! They are still operating, smelting not only metal, but also the environment and people. But this does not pertain simply to the production of lead and zinc. No, there also exist the titanium-magnesium plant that was already mentioned, as well as the Ulba metallurgical and condensor plants, and a large number of other, smaller polluters. The experts were forced to state firmly that maximum levels with regard to a series of heavy metals and other toxic elements have been reached everywhere. Sulfuric acid

and other mutagens and carcinogens have become the environment in which people live. In a number of rayons in the city the lead content in the soil is as high as 1-1.5 percent, which is close to the lead concentration in ore deposits. And yet people not only live on this land, but also grow vegetables, potatoes and berries.

An inhabitant of Ust-Kamenogorsk, according to the experts' data, consumes in one week, together with agricultural produce, an amount of lead alone that is 2.5-11.5 times greater than the standard established by the United Nations International Food Organization (it turns out that even standards like this are in effect).

How, then, can an organism survive here after it has been subjected to the effect of 50 REM and also, during the course of a lifetime, has been forced to eat lead, arsenic, vanadium, chrome, and copper, to drink them in the form of solutions, and to breathe them?

In the experts' opinion, some of the water intakes in Ust-Kamenogorsk should be immediately shut down and new ones should be constructed. The city has practically no water that meets the standards of drinking water.

In order to purify the underground water, they feel, it would require at least 200 years after the industrial runoffs have been completely stopped.

But today this is not feasible. The discharges into the rivers are continuing, and not just the ones being monitored. Space photography—and the experts used its services also during the study—located 11 underground runoffs into the Irtysh and the Ulba that were not previously known.

The purification of those rivers, in my opinion, is completely unfeasible. Especially since, below Ust-Kamenogorsk, the Irtysh has been barricaded by the Semipalatinsk dams. All the poison is retained and settles to the bottom, feeding the underground water. Possibly that was specially done. But it is necessary somehow to "sift through" the 150 million cubic meters of poison that is spewed out by industrial enterprises each year. What, then, is happening to the inhabitants of the rivers as a result of this action?

"In Krasnoyarsk in 1991 absolutely no water animals were encountered other than deformed specimens of one species," we read in the expert findings. "In the Ulba many species have such a morphologically deformed appearance that they do not lend themselves to determination. In the Glubochanka the biomass of single-cell algae that are the most persistent to pollution has been sharply reduced and this is also typical of the Bukharminskoye Reservoir."

Later on, the situation will be aggravated even more. The technology at the ecologically dangerous enterprises is at an extremely low level. Especially worrisome are the production waste products and the methods of burying them. In Ust-Kamenogorsk during the past 25-30 years, the experts feel, there has been created a long-term

geochemical center for polluting the environment with water-soluble substances. It has been computed, for example, that at the titanium-magnesium combine alone the waste products arriving are already 14-16 years ahead of the norm. Combined, those waste products constantly "replenish" the already poisoned water, soil and air.

Therefore it is not surprising that, during the past decade, the overall mortality rate in Ust-Kamenogorsk has tripled. People who are ill experience terrible tortures. The tortures eat up a person alive. I saw such martyrs... Death starts creeping up on people at the age of childhood. The experts have reliably established a high content—approximately 25—of chemical elements in the blood and biological fluids of children up to 14 years of age. The same situation pertains in adolescents and young people (18-25 years). Frequent diseases of the endocrine system, the weakening of immune status, diseases of the kidneys, anemia. Forty percent of the people studied have functional disorders of the respiratory organs with a tendency of degeneration into severe forms of disease.

All these are lines from the expert findings that were submitted to the deputies.

But these are the most frightening ones: "The level of mutagenesis, judged on the basis of the number and nature of violated chromosomes, is very high and is close to the inhabitants of the Chernobyl region, and the integral indicator of the population's health—the adaptation level—practically coincides with the indicator of a participant in the elimination of the accident at the Chernobyl AES."

The experts came to the conclusion that the entire territory of Ust-Kamenogorsk must be put immediately into the category of an ecological disaster zone. The deputies agreed on that. The session was held, it must be said, in a strained atmosphere. Demands were made to discontinue the shipments of metals until emergency measures are taken to improve the environment and until definite benefits are introduced.

Criticism was leveled at the decree of the republic's Cabinet of Ministers entitled "Urgent Measures to Improve the Ecological Situation in East Kazakhstan Oblast in 1991-1995." In particular, the deputies expressed their lack of consent with the fact that, according to that document, the enterprises are authorized to sell, in exchange for freely convertible currency, the output produced only in excess of the state production order and to use those proceeds to purchase equipment for environmental protection, social projects and medicines.

In order to earn that currency they must in this instance poison the city even more. This is inhuman. So things will not get under way, the deputies said. The funds that should be used to improve the environment are the enterprises' normal profit rather than the profit that has been earned at the detriment to the population's health.

The proposed emergency measures the experts feel have to be carried out include extremely difficult ones. They include stopping the operation of the Keramika Plant, starting in January, and the immediate suspension of the mine process stage at the lead plant until the completion of the redesigning of that enterprise.

"Keramika has to be shut down," V. Ventsel, deputy chairman of the city soviet, said during a conversation. "At one time it accepted the output of the Ulba Metallurgical Plant and began operating in parallel with beryllium. After an accident at a similar production entity at the Ulba plant, order was restored there, but Keramika remained in the shadow. Things are being done at the work sites that are so bad that they ought to be shut down right now. The workers complain and demand that the plant be redesigned to produce other types of output. And the beryllium can be completely produced by the Ulba Metallurgical Plant..."

As for the mine process stage at the lead plant, it is necessary to think about everything seriously in order not to leave the metallurgists without a job or pay.

Something that the experts feel would be important to remove the tension in Ust-Kamenogorsk is an official announcement by the republic's Supreme Council that the oblast center and the adjacent territories are an ecological disaster zone and to extend (temporarily) the action of the USSR Law governing the social protection of the citizens who have suffered as a result of the Chernobyl accident to the region's inhabitants. It is necessary, they conclude, starting in 1992 to ban on the territories that have been subjected to combined pollution by toxic elements and radio nuclides the construction of any industrial projects.

All the decisions made by the city soviet and the findings and materials prepared by the experts have been sent to Alma-Ata. But, to be completely honest, the deputies do not harbor any great hopes that the republic's Supreme Council will declare the city to be an ecological disaster zone, or that the Cabinet of Ministers will undertake something more radical than the decree that it has already enacted with regard to the eastern part of the republic.

There are good reasons for this kind of pessimism. They include, first of all, the collapse of the Union. For more than 70 years its structures mercilessly, rapaciously exploited Rudnyy Altay, but they today have washed their hands and, having safely sunken into oblivion, without an investigation, court, or sentence, have left the republic the task of figuring a way out of the predicament. But the republic is incapable of coping with this task.

"We cannot give the Aral Sea the status of an ecological disaster zone. But, of course, we understand you and we shall support you," A. Dubitskiy, chairman of the republic's Committee for Ecology and Use of Natural Resources, said in his statement at the session. "But the

law is imperfect... So don't count on any quick success. The path to resolution will be difficult."

Yes, people used to say that there are no grounds for giving the city the status of an ecological disaster zone, but when those grounds appeared, another reason is found—the law is imperfect. I won't be making a mistake if I say that the words stated by A. Dubitskiy produced on the delegates the same effect that would have been exerted on a dying man by refusing his last wish to smoke a cigarette.

What, then, should be done? Oughtn't there to be some way out of this deadly impasse? Perhaps even with the aid of international organizations if we cannot cope with our disasters by using our own efforts. We have to hurry up. Because the "quiet Chernobyl" is not sated. It is "consuming" people methodically and purposefully. The time may come when there will not be anyone to smelt the metal that everyone needs. So help the people inhabiting a region that has already been living for a long time under the conditions of four Chernobyls.

Former Military Plant To Produce Catalytic Converters

92WN0437A Moscow MOSKOVSKAYA PRAVDA
in Russian 14 Mar 92 p 2

[Article by G. Orekhov: "Catalytic Converter of 'Uralsk Bottling'"]

[Text] The air that you and I breathe is of concern to not just doctors, health workers, and biochemists, but also to the workers who make defense and space products. The air of our cities should now become cleaner thanks to the Uralsk Electrochemical Combine, an enterprise that until recently was supersecret.

No one disputes the fact that we also need pots and pans very badly. But in the conversion process, an enterprise like the Uralsk Electrochemical Combine, until recently a supersecret enterprise that enriched uranium isotopes on a high technological level and produced electrochemical current generators for spacecraft, should obviously look for a better way to utilize its capabilities. It looked for one—and found it. And it was not some fast-talking prospective partner out to take advantage of gullible Uralsk executives, but the Engelhard Corporation, the acknowledged leader in the development and application of technologies to protect the environment. The UN Ecological Program and U.S. Presidential Council on Environmental Quality awarded the company their Award of the Decade for its invention of the monolithic catalytic converter.

Now the company's catalyzers will be appearing on our automobiles too—converters produced at an "Uralsk bottling plant," so to speak. An agreement has been signed under which Engelhard will transfer technology and a patent license and assist the Uralsk combine in building Russia's first automobile catalytic converter

plant. An existing plant in Yekaterinburg will be converted for the new facility. The new plant is to go in operation in mid-1994 and will have the capacity to produce up to 2 million catalytic converters annually.

In presenting the blueprints, Donald La Torr, the American company's executive director, observed that thanks to catalytic converters, exhaust gases in automobiles currently produced in the United States are 96 percent (!) cleaner than they were 20 years ago. By contrast, it's a bit embarrassing to talk about what we're breathing in this country. Suffice it to say that the daily concentration of all manner of hazardous impurities in the vicinity of the Garden Ring Road exceeds the allowable limit by 50 to 70 times. After which promoting catalytic converters is somehow indecent. Even if you don't know that construction of the plant, which will employ no more than 150 to 200 workers, will be recouped within a year in rubles and within three years in hard currency.

"We are proud to have been chosen by the Russian side to protect the environment in Russia," Mr. La Torr said with characteristic American enthusiasm. No less enthusiasm was excused by First Deputy Minister of Nuclear Energy Boris Nikipelov. "The quality of this agreement must be very high, for it combines Engelhard's first-rate technology with the first-rate skills of the Uralsk Electrochemical Combine's employees and its equipment," he noted. "The openness of our industry is also being confirmed. I hope that an exchange of technologies will also become possible in the future."

It would not be inappropriate to say that our enterprise purchased the highly acclaimed technology not with dollars generously supplied by the Russian ministry, but with its own foreign currency funds, as opposed to using that money to buy VCRs and other goods in high demand, as they say, for its employees. It must be assumed that plant officials did this not only out of altruistic motivations, so that we can all breathe clean air in the future, but also, like all good businessmen, because they have the ability to plan a few moves ahead. After all, the catalytic converters currently sell for somewhere around \$200 on the world market. And the number of automobiles in the world is expected to grow from 500 million to 2 billion in the next 20 years. Naturally, the Uralsk plant's catalytic converters will not be confined to the CIS economic space.

Needless to say, it's high time that we take action to clean our cities' air through legislation as well. Incidentally, only in 1995 is Russia to switch to leadfree fuel. And the sulfur spewed out by our diesel engines is 10 times greater than that produced by American models.

The news that the Uralsk Electrochemical Combine is discussing with the American side specific issues relating to plutonium, which is one of the waste products in dismantling nuclear weapons, was not hushed up at the meeting, which was organized by the Soviet-American ad agency Tisa, Ogilvi and Mayzer. These days, that's no longer sensational.

Krasnoyarsk Plutonium Production To Cease

PM2704130692 Moscow IZVESTIYA in Russian
18 Apr 92 Moscow Edition p 1

[Yuriy Rogozhin report: "Stopping Reactors in Krasnoyarsk"]

[Text] A collegium session was held at the Russian State Committee for the Supervision of Nuclear and Radiation Safety 17 April. It was attended by specialists from the Ministry of Atomic Energy, State Counselor A. Yablokov, and people's deputies who are members of the Russian Federation Supreme Soviet Ecology Committee.

The operation of the two industrial nuclear reactors sited near Krasnoyarsk and designed to produce weapons-grade plutonium was discussed. The academics were particularly concerned about the fact that these reactors are directly cooled by water drawn from and then returned to the Yenisey.

It was noted that, despite the relatively reliable operation of these reactors, the very principle of their operation breaches the recently adopted Law on the Protection of the Environment. On this basis and given the lack of any need to process plutonium, the collegium decided to shut down the first industrial reactor as of 1 June and the second no later than 1 September this year.

Current Conditions at Sverdlovsk Anthrax Site Examined

92P6022A Moscow POISK in Russian 7-13 Mar 92, p 5

[Article by correspondent Lidiya Usacheva: "Nine Hours Behind the Barbed Wire: Reporting From the 19th Military Installation From Which, Many Allege, Anthrax Broke Out in 1979"]

[Text] Yekaterinburg—I had not intended to touch on this history, but I could not avoid it. I very much wanted to look into the eyes of those who lived and worked here in the fatal year of 1979, to hear their direct response to an equally point blank question. This is why, while greedily devouring information on the present day of the Center of Military Technical Problems of Biological Defense of the Scientific Research Institute of Microbiology of the Ministry of Defense—the present name of this facility—I unintentionally returned my interlocutors to those events of 12 years past.

In response to this, many frowned and the colonel escorting me, the deputy director of the center, Anatoliy Mikhaylovich Lobur, quickly changed the topic. On the whole, he proved to be an uncommonly severe stage director: not a step to the side, every meeting, every word—strictly by prearranged script. True, it was proposed that I select my interlocutors myself, but that is like looking for a fellow tribesman on a little-studied planet. Any attempt at free discussion was immediately interrupted.

To sum up, from 0900 to 1800 I visited five laboratories. Before me passed—not counting the escort who also interjected his commentaries from time to time—11 interviewees, mainly military chemists, physicians, biologists and one civilian—an engineer.

At times it seemed that I was drowning in a sea of highly specialized information. The outward appearance of openness was created, although I could not believe in it because a man with a tape recorder constantly followed my main escort like a silent shadow. "Are you checking up on me?" I burst out near the end. "No, on ourselves," was the equally awkward reply.

Thorns and Roses

The first impression when, passing by the central guardpost, you leave the bustle of the city and enter the confines of the center is that you have found yourself in a comfortable resort town, where sun sparkles on white snow, there is silence, peace... And the rare passerby moves towards you and the low stone buildings fit prettily into the green woods. And in harmony with your mood, your escort in shoulder boards and general's papakha [hat] carries on a conversation about the delightful life here: no crime, no social disturbances. The children are growing up—there is everything they need here: no problems with either schools or daycare.

But here the path ends and again a barbed wire fence comes into view—the checkpoint leading to the battalion's territory and consequently more vigilantly guarded. We take a few more steps and again push our way through a revolving gate: Ahead lie the production buildings with the same secret laboratories that still strike terror into the hearts of the townspeople. "All the same, why are you needed?" I wonder. "Isn't there a convention prohibiting biological weapons?"

"And has Hussein signed it?"

The argument, it cannot be denied, is convincing. There is a danger—antidotes are needed. We need to know without fail how man, nature and equipment will behave if, God forbid, a disaster happens. And for this reason in numerous experiments with simulants of toxic and pathogenic substances which are manufactured right here in Candidate of Medical Sciences I. Poberiye's laboratory, a search is being conducted for more effective measures of defense and disinfection.

The pride of the military scientists is the climatron being built on the territory of the installation: large chambers where the "susceptibility" of tanks, armored transporters, BMP [armored infantry vehicles] and similar military equipment to different microbes will be tested.

It turns out that the microbe is an omnivorous creature. It may "eat" even metal. And as the result failures occur in the systems of aircraft, guns and tanks. And often! The loss is up to R40 billion per year. The problem is extremely serious. During the last five years alone, more than 100 scientific books in military and academic

science were devoted to it. At the installation it is being studied in the department of Candidate of Medical Science Valeriy Nepokrytiy. It is seriously studied: in a comparatively small department there are eight candidates of science, the most luxurious instrument base. By the way, one can't get into the installation even as a junior research assistant without a scientific degree.

So if it happens tomorrow that the need for missiles and tanks drops off, the knowledge will be useful. Let's say that our hospitals, maternity homes and pharmacies are infected with staphylococci, our poultry farms, with salmonella. Cleansing the harmful microorganisms from their environment is a mere trifle for the scientists in shoulder boards. And lately they have been actively helping the townspeople control this misfortune.

It is noteworthy that everywhere you go there is perfect cleanliness and order. Fish frisk in aquariums, flowers twine along the walls. And the main thing—it's been a long time since I've seen the like—everything in its own place. Here work people, mainly women, in snow-white caps bristling with starch.

A letter by one worker of the Center was published once by the local newspaper VECHERKA: "I am a native of the 19th Installation, I have lived here for 26 years. No, I am not an ardent patriot, there are no military among my relatives, but what other enterprise can boast of such a production area, such as exists in no sanatorium? When I arrive at my installation—only here do I breathe deeply, safe from the asphyxiating gases of my native Sverdlovsk-Yekaterinburg."

I, too, am ready to subscribe to these words.

Why It Is Not Liked

However the name of the 19th Installation has changed (first it was the Scientific Research Institute for Vaccine Preparations, then, after certain events, the Military Epidemiology Sector of the Scientific Research Institute of Microbiology of the USSR Ministry of Defense, and now the above named center), its main task has always been and remains biological defense of buildings, military materiel and the population in the event of a biological warfare attack. But here is the paradox—the population is not even asking but demanding: "Rid us of this 'defense'. Remove the facility from the town immediately!"

A wave of dissatisfaction with the military in white [lab coats] swept over the town in 1990-1991, when a series of publications containing accusations against the microbiologists rolled through the central newspapers like an angry breaker: Death had come to the Sverdlov residents not from infected cows but from the laboratories of the military installation. It remained only to be demonstrated. But that was exactly the hardest thing to do—at that time the KGB tried its hardest. The deputies, however, were inclined to tell the people the truth and force the guilty institution to pay compensation to the relatives of the deceased. Inquiries were made to all the

highest authorities. And responses were obtained including even one from Yazov, who is now awaiting his hour in the "Matrosskaya Tishina" jail. The head of the defense department echoed that the outbreak of the disease was caused by infected meat. Committees were created at all levels... And everything died down.

True, a commission of the Russian parliament is threatening to study the anthrax incident, but it hasn't convened yet. And around the 19th Installation new rumors are spreading, inspired by the impending construction of a plant there to manufacture promising antibiotics. And although the command swears that ecologically clean production is planned, the people don't believe it. After all, how many times have they been deceived? "Is it possible," Anatoliy Mikhaylovich tries to make his point, "that in all this time not one of the residents of the settlement over which the 'orange cloud' allegedly dispersed has been injured in his kitchen garden? After all, everything was supposed to have settled on the soil. But there aren't any complaints, are there?"

Anatoliy Mikhaylovich doesn't live in America and knows very well that our doctors write diagnoses as directed: What does it matter to them—acute respiratory disease or anthrax? Am I being insulting? Not at all—in the beginning that was the diagnosis: death from pneumonia. But when the pneumonia struck tens and hundreds of people. . .

"No, there was no discharge," asserts the author of an anthrax vaccine unique in Siberia, candidate of medical science Nikolay Vasilyevich Sadovoy, looking me straight in the eye with his honest gaze. "If there had been, the outbreak would have lasted not a month and a half, but a week at most. But I favor specialists studying the question and removing what are doubtlessly futile emotional gestures by the press against us."

Do you sense it? They started on a positive note and towards the end the righteous anger died out.

And All the Same There Is A Reason To Like Them

"Conversion?" Lobur thinks for a minute. "This word somehow doesn't apply very well to us. After all, we never were a VPK (military industrial complex) that worked on war. We always worked on defense."

Nonetheless the process that has seized all of "defense" is going on in the 19th Installation visibly or invisibly. The sharp drop in budgetary financing is forcing the military scientists to search for means for existence. And that means—coming out from underground, opening up to the surrounding world and working with it. Today the Center of Military Technical Problems of Biological Defense is ready to offer—I carefully studied their catalog—more than 70 services to the civilian population starting with disinfection of hospitals, pharmacies, and food industry enterprises and ending with participation in solution of ecological problems of the town and oblast.

Much of what the specialists of the 19th Military Installation are doing strikes the imagination. For example, a method of eliminating contamination of water and soil, and spills of fuel oil and other oil products, developed jointly with scientists from the Tyumen Petroleum and Gas Institute. Microorganisms are placed in a vessel containing a fairly thick layer of fuel oil, certain conditions are created—and in three weeks (depending on the thickness of the layer) the fuel oil has disappeared. In "eating" it, the microorganisms give off proteins that fish are glad to feast on.

Or here is a big problem in the CIS—destruction of chemical weapons. Attempts to build special plants have stumbled over protests of the "Greens". One way out is, again, microorganisms. On the eve of my arrival in the installation a conference took place on this issue with participation by tens of military and civilian departments. It seems that a way has been found. And the same principle will be used—a microorganism placed in a medium of a chemical substance will eat it and as a result itself die. One-hundred percent purity and much lower expenses.

I admit that I left the installation with a different attitude than when I arrived. I regret one thing: The innuendos and the long concealment of the truth have resulted in mutually unacceptable relations between those who, to the contrary, should have the greatest trust in each other—the residents of the surrounding area and the workers of the military scientific center. After all, such centers exist throughout the world. And they are not hated and feared, solely because of a constant stream of reliable information on such centers. It rids people of conjectures and leaves no grounds for fear. It's time for us to live by these principles.

Vozrozhdeniye Island Biological Weapons Activities Still 'Secret'

92P6021A Moscow DELOVOY MIR in Russian
No 61, 28 Mar 92 p 1

[Article by Irina Nevinnaya: "Island of Degeneration"]

[Text] Were biological weapons tested in the Aral Sea? The "greens" categorically assert, "Yes." A frank dialogue with the military is apparently yet to come.

In the middle of the last century, during one of the expeditions around the Aral Sea a Russian naval officer A. Butakov discovered an unknown, uninhabited island. The discoverers named it Konstantin in honor of Prince Konstantin Romanov, president of the Russian Geographical Society. Soon the sailors saw yet another island, a scrap of dry land, and named it in honor of the Russian Emperor Nicholas. The third to be drawn on the map was Naslednik [Heir] Island.

When did Nikolay Island become Vozrozhdeniye? It is hard to say. But what is known for sure is that after the war a special, secret life began. Lost in the sea far from

populated shores, scorched by the sun, devoid of fresh-water, the island was uninhabited and attracted neither fishers nor sailing enthusiasts. But on the other hand, it would be harder to find a better place for organizing a regular military proving ground. Flat terrain, remoteness from curious eyes. What the military was doing on the island remained a secret behind seven seals.

Only occasionally did the Aral region inhabitants and shepherds, and geologists, geographers, biologists working on expeditions, become witnesses of unpleasant and hard-to-explain events. At times in clear, dry weather, clouds, now yellow, now black, approached from the direction of the sea. It became hard to breathe. People took shelter in their houses and yurts. Some became ill.

The secret island was studied by the international public committee "Aral-Asia-Kazakhstan". And while previously all the fragmentary stories about the small scrap of land had sounded more like a gloomy legend, the committee members—scientists and public figures, not only collected witnesses' testimony but also tried to document it.

Thus, in 1976, a massive die-off of fish occurred in the Aral Sea. By that time the ecological conditions in the region were undergoing severe deterioration. The sea was becoming shallow, the composition of the water was changing. But the fish rotted not only at unsafe sites—where the water was polluted with the runoff from chemicalized rice fields. They also died where the sea remained essentially healthy. The true cause was not determined at that time. And perhaps it was decided not to make it public?

In June 1989, a heavy smog hung over the Aral region. The same summer outbreaks of plague were noted in the region. A mysterious disaster also befell sheep—entire flocks lost their wool. The bald sheep died.

A year earlier, in May 1988, still another tragedy occurred. On the Turgay steppe (to the north-east of the Aral Sea) in one hour approximately one half million saiga [antelopes] dropped dead. A disease overcame the animals suddenly, when spring was in full swing, when food and water are plentiful and the undemanding steppe dwellers feel very healthy. The ground was covered with saiga carcasses. The fact of the mass death was concealed from the public. The dead saiga were buried by bulldozers and ploughed under by tractors. And it was the military who did this. A commission that arrived from the center—it also included men in shoulder boards—did an on-the-spot "investigation" and made a diagnosis—the saiga had died from an intestinal infection.

The reassuring explanation was hard to believe. For many years the military had answered all questions and inquiries regarding the proving ground on Vozrozhdeniye Island in the negative: They said that biological weapons had never been tested on the territory of the republic. And, by the way, they weren't lying. The fact of

the matter is that the command of military unit 25484, based on the island, is located in Aralsk on the territory of Kazakhstan, and the proving ground itself is on the part of the island that belongs territorially to Karakalpakstan.

Finally publications appeared abroad. It became impossible to remain silent. In response to an inquiry by the president of the public committee "Aral-Asia-Kazakhstan", poet and public figure M. Shakhnov, came a letter signed by then Defense Minister D. Yazov and former Atomic Industry Minister V. Kononov. The letter said, "With respect to information on the tests of biological weapons allegedly conducted on Vozrozhdeniye Island in the Aral Sea, we inform you that the Soviet Union has signed and strictly observes the Convention of 1972 on the Prohibition of Biological Weapons. A field scientific research laboratory of the USSR Ministry of Defense's Scientific Research Institute of Microbiology, which engages in testing of defensive means against biological weapons, is located on Vozrozhdeniye Island".

How should this be understood? Using elementary logic, if defensive means against biological weapons had really been tested on the island, is it possible to conduct such studies without the agent itself? And if field tests of biological or chemical weapons were conducted here up to 1972, then terminated under the international agreement, why not say so honestly?

In 1990, an international commission from UNESCO visited the Aral area in order to analyze conditions in the region. The authorities prepared for the meeting in advance. Food and extremely attractive consumer goods appeared in the stores. And on the shore of the sea, which had receded into the distance, and on its salt-saturated, dried out bottom, for a few brief days green parks appeared. Saplings were hurriedly stuck into the sick earth. Who cared that in a couple of weeks they turned into dessicated skeletons?...

People's Deputy M. Shakhnov gave a speech at a session of the Supreme Soviet of the republic of Kazakhstan and called on the government to terminate the existence of the proving ground on Vozrozhdeniye Island, calling it "Vyrozhdeniye [Degeneration] Island". The session supported him, making the appropriate appeal to the military. Three months passed, but the "masters" of the island have remained silent.

What is more, literally several days ago the international public committee received a telegram from Aralsk sent by the head of the administration of Aral Rayon in Kzyl-Ordinsk Oblast, B. Kayupov. It said that on 7 March a "convoy" heading from military unit 25484 had been detained. An attempt had been made to "evacuate" heavy-freight trucks, tractors, tank trucks and other equipment. The "greens" fear that the specific, secret equipment may have already been dismantled and shipped out.

In my opinion, we should strive for publication of the documents showing the scientific activities of the laboratory on the island and of the parent organization—the Scientific Research Institute of Microbiology of the USSR Ministry of Defense. And not only that: the laboratory was not the only one to have engaged in development of biological weapons and, of course, the proving ground on Vozrozhdeniye Island is also far from being the only one in the former Soviet Union.

Further Revelations on WWII Chemical Dumping in Baltic

92WN0452A Moscow OGONEK in Russian
No 8, 8 Feb 92 pp 8-9

[Interview with Leonid Kasyanenko, conducted by Leonid Pleshakov: "Investigation": "The Bomb on the Bottom"]

[Text] Nowadays his phone calls disturb me much less than they used to. But there was a time... Now almost 30 years have passed since Leonid Kasyanenko and I set out on a 10-month expedition aboard the nonmagnetic schooner "Zarya" [Dawn]. Our voyage was an enviable one, with stops at Japan, Canada, San Francisco, Hawaii, Fiji, Western Samoa, Tahiti, the Marquesas, Mexico and the Panama Canal. After that trip I went ashore to stay, while he continued to sail in that wooden sailing ship, defended his dissertation and headed several expeditions. Each time he returned from the sea he would call me, tearing my heart out with the details of his latest visits to Dakar, Montevideo, Freetown or St. Helena Island. His stories filled me with longing: while I was stuck in slushy Moscow someone else was crossing the equator, and I was not the one being greeted by spouting whales in mid-ocean, nor was I the one landing on shores fringed with coconut palms, or listening to parrots chattering in banana groves... But then it got a bit easier to bear...

Nothing ages a thing like the passing of years. It does not matter what it is, whether people or a country's veteran sailing ships. And so the "Zarya" also reached an age where she could no longer make the run to Easter Island or Australia or New Zealand, or simply head out for the "roaring forties" or the Tonga Trench anytime. Years... Though she could still creep along, those in charge of her fate ordered that the "Zarya" not sail any farther than 200 miles from shore, so that if a storm warning went out the poor old ship could slip into the nearest safe harbor. And this for the "Zarya," which had in its day seen hurricanes of force 10 or even 20! From that time on she crept around the Baltic Sea, only occasionally sailing out into the North Sea; therefore my old friend's periodic stories about those trips no longer bothered me as much. What romance is there in the Baltic Sea, I thought? What is there to envy? But in this life, as an old woman once said, there is always room for heroism.

A few days ago I got an unexpected call from Kasyanenko: "I am in Moscow. I have something serious to talk about... Yes, about the 'Zarya'..." We met. The following

is almost our entire conversation; I left out only a few details of concern only to the two of us.

[Kasyanenko] One time Eduard Stepanovich Gorshkov, director of the magnetic observatory in Voyeykovo, which is near St. Petersburg, introduced me to his old friend Viktor Ivanovich Demidov, describing him like this: a professional sapper and explosives expert who later turned to journalism. And he knowingly added: "I want to offer you a very interesting case."

It turned out that Gorshkov and Demidov had known each other long before, back when Viktor Ivanovich was seeking out and destroying unexploded bombs and artillery shells left in Leningrad Oblast after the war. He believed that they could be located using magnetic instruments in the possession of Gorshkov's observatory. Unfortunately, that attempt was doomed to failure from the start: metal structures such as buildings, beams or concrete reinforcement—anything that contained iron or steel—always give off a magnetic signal, and it proved impossible to differentiate that signal from the signal of an unexploded bomb or artillery shell. In a word, the attempt failed. Yet in spite of that Gorshkov and Demidov kept in touch and remained friends. Most importantly, even after Viktor Ivanovich changed professions he still kept after his idea of using magnetic instruments to locate unexploded munitions.

I do not recall the details, but somehow through his efforts he came upon a colonel who had served in the Great Patriotic War, and who told him a secret that he did not want to carry with him to his grave: immediately after the war we and our allies dumped into the Baltic Sea tens of thousands of bombs and artillery shells containing toxic substances; these had been captured from secret Wehrmacht depots at the very end of the war. Seawater and time have most likely done their work, and at any moment these munitions could "go off." If that happens, every living thing in the Baltic Sea could be killed. Once again Viktor Ivanovich decided that magnetic instruments could be used to search for these terrible dump sites, and since the observatory in Voyeykovo had no experience with operations under maritime conditions, Gorshkov recommended that he seek help from the "Zarya," since it had already done magnetic research on oceans around the world—and already had the necessary maps on hand.

Now Demidov was waiting for me and the "Zarya" to join this noble cause.

Quite frankly, there was much in his offer that troubled me.

For example, the number of chemical munitions cited by the colonel seemed improbable: millions of artillery shells and tens of thousands of bombs. Then there was the question of where to look. In his ignorance Viktor Ivanovich had clearly overestimated the capabilities of the "Zarya's" instruments. The problem was that the strength of a magnetic signal is inversely proportional to the cube of the distance from its source. In other words,

the signal from an iron or steel object at one meter from that object would be only one thousandth as strong at a depth of 10 meters, at 100 meters the signal strength would be only one millionth as strong!!! A magnetic signal of that strength from a bomb would be so weak that it could not be differentiated from the signals emitted, for example, by ordinary ocean waves during a minor storm, because waves also carry small electrical charges.

Furthermore, in the thousands of years that human beings have been sailing the Baltic Sea so much metallic junk of all sorts has been dumped into it and so many military and civilian vessels, mines, torpedoes, aircraft, munitions and anchors have accumulated in it that sorting out the signals emitted by all of them from on board a schooner and deciding what was actually lying on the bottom would be difficult.

In addition, the search for munitions was not part of the work program scheduled for LfIZMIRANu (the Leningrad—now St. Petersburg—branch of the Academy of Sciences Institute for Earth Magnetism, the Ionosphere and Radio Wave Propagation). Thus there was little hope of getting funding for such work, especially at the present difficult time.

[Correspondent] What did you do?

[Kasyanenko] I gave Demidov an evasive answer, saying I would think about it... Then I went out looking for information that would clear up several of the questions I had.

From one reference book I learned that toward the end of the war fascist Germany was producing roughly 230-250 metric tons of toxic substances annually. Of those, 20,000 metric tons consisted of toxic substances producing neural paralysis: sarin, saman and tabun. The remainder were mainly skin irritants: mustard gas, lewisite and phosgene. As you are aware, the Germans used some of these toxic substances to exterminate prisoners in concentration camps. They also attempted to destroy a certain quantity at the very end of the war, and special installations were even built for that purpose. But the collapse of the fascist empire during the final months of the Third Reich's existence occurred so quickly that they were of course unable to complete the destruction of all chemical weapons, nor were they very inclined to do so. If one takes into account the fact that toxic substances were not used at the front, then tales of millions of artillery shells and tens of thousands of large aerial bombs filled with chemicals appear quite realistic.

Then I remembered that the sea charts used by the "Zarya" during its Baltic Sea expeditions had notations indicating chemical substance disposal sites in three locations. No information was given as to what kind of chemicals had been disposed of, when or by whom. I had not previously paid much attention to those notations, because the same charts also noted the locations of

explosives. One could only guess what the cartographer who included that kind of warnings to seamen had had in mind.

I went to see the guys at the Cartographic Products Center for an explanation. We had long had a good relation with them, because it was there that we sent the findings of our magnetic observations to be used in the making of magnetic sea charts. Unfortunately, the Cartographic Products Center was not able to tell us anything specific: the notations indicating toxic substance disposal areas had been carried over from one set of charts to the next, but no one knew when they had first been made or on the basis of what documents. They recommended that we search for that information in the archives at Baltic Fleet headquarters or in the naval archives of fascist Germany. Perhaps that was where the information had originated.

If you consider our tendency to classify everything whether it needs to be or not, and the fact that in the years that had passed since the end of the war we have had so many reorganizations, with archives being transferred from one institution to another, accompanied by the losses which are inevitable in such cases, or else the outright destruction of certain documents, then one could assume from the start that getting any information from those sources was a hopeless task.

However, in the press—both ours and the foreign press—articles on the dumping of munitions containing toxic substances in the Baltic Sea have appeared on a fairly regular basis. Either the latest storm would wash up an unexploded chemical-filled bomb on the coast of Sweden, or fishermen would be poisoned after bringing up poisonous munitions from the bottom along with their catch. One real sensation was a report by a Swedish scientist studying the sea floor of the Bjern Okerpund, who while mapping the location of sunken ships near the Swedish coast, discovered a concentration of sunken warships from fascist Germany in the Skagerrak, their holds crammed with artillery shells, mines and bombs containing mustard gas, tabun, sarin and phosgene—hundreds of thousands of them.

[Correspondent] How did they get to the bottom of the sea?

[Kasyanenko] Soon after the end of World War II the former Allies—the United States, the USSR and Great Britain—decided to destroy the captured chemical weapons by dumping them in the sea. The convoy of transport ships found in Skagerrak Okerpund may have been headed with their terrible cargo into the North Sea or even the Atlantic Ocean, been caught in a violent storm while in the strait and gone down. However, it is also quite probable that plans were made from the start to sink them in the Skagerrak. As for the chemical munitions which are occasionally discovered in the Baltic Sea itself, no attempt was even made to transport them that far—they were simply dumped to the bottom near the coast.

[Correspondent] Did they hope that the sea would keep their secret?

[Kasyanenko] Hard to say. One must remember that at that time there were no such concepts as ecology or environmental protection. Nature's capacity for self-cleansing and self-restoration were believed to be limitless. Now that we realize that human beings can easily shatter its fragile mechanism, those responsible for the well-meanings stupidities and environmental crimes of the past are doing everything in their power to conceal their role.

As I studied the articles I noticed an odd consistency: soon after each incident the topic of chemical weapons on the sea floor would first reach a peak and then gradually die down completely. As if it came up against an invisible barrier. As if the people who had once issued the idiotic orders were still in power. Once the Leningrad Greens and RSFSR people's deputy Oleg Basipashvili requested that the Ministry of Defense and the USSR KGB release information on chemical weapons dump sites in the Baltic Sea. The Ministry of Defense promised to search its archives for the information, and the KGB recommended an inquiry to its Leningrad Oblast administration. Supposedly it would be better informed regarding the matter. The Leningrad Oblast KGB Administration replied that it possessed complete information regarding the dumping of chemical weapons in the Baltic Sea, but that that information was classified and would remain so. In the opinion of experts, only 15-20 years remain until the metal housings of the bombs and artillery shells are completely corroded away. One can easily imagine what will happen when these toxins escape.

[Correspondent] All right, one can understand why we, the United States and Great Britain are not particularly interested in publicizing this old story, but why are the other Baltic countries keeping quiet?

[Kasyanenko] What can they do? Let us suppose that the Danish prime minister reports to the residents of Bornholm that the chemical weapons that were dumped in the vicinity of their island could become active at any moment, and that tragic consequences will be the result for everyone. How could the islanders go on living in constant expectation of the end? And the prime minister would catch it, too, because he knows the whole story yet has taken no measures.

[Correspondent] Are people once again to be hostages to politics? Does that mean that the whole truth will never be known?

[Kasyanenko] It seems to me that after the August coup the military and state security are beginning to deal with their secrets in a more rational manner. Especially since many of them have already been revealed.

In January of last year IZVESTIYA published a letter from Reserve Capt. 3rd Class Konstantin Petrovich Terskov, who is from Kireyevskiy Rayon, Tula Oblast,

in which he reported that during the war and immediately thereafter he served with the Baltic Fleet and in 1947 dumped captured chemical weapons into the sea on orders from his superiors. I immediately contacted him with a request to clarify several details. Fortunately Konstantin Petrovich studied before the war at the Military School imeni Frunze, from which I graduated in 1954. Perhaps that helps explain the fact that I soon received a confidential reply from him.

[Correspondent] What did he report?

[Kasyanenko] I will relate the contents of his letter to the newspaper and his letter to me at the same time.

In May 1947 he was sent by orders of the fleet to the city of Schwerin (in the state of Mecklenburg, a part of the former Soviet occupation zone in Germany), where he received orders to dump into the Baltic Sea approximately 50,000 metric tons of German 500-kilogram aerial bombs filled with mustard gas, lewisite, phosgene and diphosgene. For the purpose of carrying out this assignment Terskov was assigned a detachment of five German transport ships and two Baltic Fleet trawlers, BTShch-729 and PTShch-361. The bombs had to be picked up from warehouses in the city of Wolgast, which is on the western inlet connecting Szczecin Bay with the Baltic Sea. The orders were to dump the bombs into waters at least 100 meters deep. The whole operation was supposed to be complete by 31 December 1947. Maj. Gen. Sokolov was in charge of it.

[Correspondent] Why was a 100-meter depth mentioned specifically? Are there not a lot of places like that in the Baltic Sea?

[Kasyanenko] I think the purpose was to keep the secret more securely. That depth cannot be reached in light diving suits, and to my knowledge deep-water independently-operating research craft did not exist at that time. The idea was just to dump the stuff, and no one would find out. The fact that there really are not that many areas over 100 meters deep in the sea will to a certain extent make the search easier.

They set out on their first trip on 6 June. They found an appropriate spot 56 miles from the outer buoy of the port of Liepaja, a location determined by the calculation and directions of an ecologist. They dumped their load. Then they went back, heading into the west wind that prevails in that region, to get another load.

When Terskov calculated the capacity of his transport ships' holds, their speed against a head wind and the time required for the loading and unloading operations, he realized that he would not be able to complete his superiors' important assignment by New Year's Day. His commanders then allowed him to seek out closer locations, so long as the depth met the unloading requirements. Such a place was found five miles south of Kristians Island, which lies east of Bornhold Island. The depth was 101 meters, just what was required.

On 27 December 1947 this military assignment was completed ahead of schedule.

Terskov sent his reports on the work he had done to the Soviet Military Administration in Germany (SVAG) in Berlin. He kept copies for himself, but after so many years he no longer has them. The transport ships' cargo logs stayed with them, and the logbooks of the two trawlers, which naturally would indicate the ships' course and the coordinates of the areas where the work was done, appear to have been sent to naval archives at the base in Baltiysk. It is not beyond the realm of possibility that they have survived. Reports also went to the fleet staff and from thence, Konstantin Petrovich supposes, to cartographers, who then made the notations on navigational charts.

[Correspondent] Did Terskov write about any other details?

[Kasyanenko] He reported that the loading and unloading of the bombs was done by teams of German cargo handlers. Both the ships' crews and the cargo handlers were fully equipped with protective clothing and gas masks. However, some people were careless in their use of them, and two Germans died after being poisoned.

The bombs were only dumped overboard in the daytime. When the sea was calm the ships drifted, and when the sea was stormy the transport ships made slow headway into the wind and waves.

[Correspondent] I recall that the weather off Bornhold Island is always nasty...

[Kasyanenko] There is a storm every other day, a west wind blows like in a wind tunnel, and the current pulls one in the direction of the Sandhammaren Strait. I should know—I spent a lot of time on board the "Zarya" in that area. I understand what you are getting at: the munitions must be strewn over too large an area...

[Correspondent] Of course. No matter how carefully you lay a course, you are still going to drift.

[Kasyanenko] Unfortunately, it gets worse. Some of the bombs had air pockets inside and remained afloat. They had to be shot to sink them. Others, as I understand it, had zero buoyancy (or close to zero) and began drifting with underwater currents. At the time, Terskov wrote, the Scandinavians repeatedly reported to SVAG that they had found bombs containing chemicals washed up on the sandy beaches of Sweden, even though he was sure that during the dumping operation not a single one had remained on the surface...

That is his story.

[Correspondent] If I understand you correctly, hunting for these accursed bombs in the sea will be harder than finding a needle in a haystack...

[Kasyanenko] I have considered many proposed alternatives and I am convinced that the most promising is to use our own "Zarya" during the initial stage of the search. It is the only non-magnetic research ship in the world and is better adapted than any other for this task.

Once again the old saying holds true: no matter how you may try to conceal a thing, the truth will out. Sooner or later all secrets are revealed. Now it is too late to lash out at the people who were responsible for this planned environmental disaster in the Baltic Sea. No amount of angry words can help in this case. Now we need to do something, because there is little time left for decisive action...

We appeal for a response from anyone who can aid in this search.

Alternatives for Dealing With Chemical Weapons in Baltic Examined

92WN0436A Moscow *RABOCHAYA TRIBUNA*
in Russian 10 Apr 92 p 5

[Article by *RABOCHAYA TRIBUNA* Military Commentator Sergey Doronin: "Sensation: The Sea Knew But Was Silent"]

[Text] Thousands of "chemical bombs" hidden deep in the sea after the war continue to pose a danger to ecology and people's health.

The fact that the Soviet Union took part in dumping fascist Germany's chemical munitions into the waters of the Baltic in the early postwar years has finally been admitted by our side. The details of that unprecedented operation remain a secret: Where the dumping took place, and what kinds of trophy munitions we hastily got rid of and in what amounts nearly half a century ago.

Former FRG Defense Minister G. Stoltenberg has put the total weight of toxic substances destroyed in conjunction with the United States and Great Britain at 260,000 tons. They include mustard gas and tabun, and it cannot be ruled out that zarin [zarin], phosgene, and diphosgene were dumped as well. The figure could be even greater: Germany submerged some of its toxic substances as attacking Red Army units were approaching its borders.

Incidentally, there are also no less toxic substances and components for them. The United States, Great Britain, and later France "worked" with such substances and components up to 1957 through 1965 in the North and Mediterranean seas, in the Bay of Biscay, on the Faroe Islands, and the Hebrides.

True, we ourselves are responsible only for dumping into the Baltic, and only the more than 13,000 tons of chemical munitions, chiefly mustard gas, that were turned over to us for destruction. Unless, of course, the facts and evidence emerge that we and the allies also "disposed" of Japan's chemical weapons in a similar way during those same years. And Japan's munitions stocks

were no less impressive—one-fourth of all the Japanese Army's artillery shells and up to one-third of all its aircraft bombs were filled with toxic substances.

Needless to say, the victors' legacy was not a pleasant one. And so far no one has studied the problem of how the submerged chemical weapons have affected the sea's ecology and people's health. But there have been victims, including among our fellow countrymen.

The following testimony comes from Professor and Doctor of Medicine Nikolay Tolokontsev:

"In 1951 I came across instances in which fishermen of the Kaliningrad Expeditionary Fishing Directorate had been exposed to mustard gas. As a doctor and sanitation and chemical protection inspector of the Fourth Baltic Fleet, I often treated them.

"All the accidents occurred in the vicinity of the Danish Island of Bornholm. There fishermen caught in their trawls 'leaking' aircraft bombs and shells. Captain 1st Rank Tsisar, a flagship chemist, told me that they could be German chemical munitions dumped after the war."

Tolokontsev's recollections are confirmed by the testimony, now known to many, of Captain 3rd Rank Konstantin Terskov, retired, who in 1947 dumped toxic substances in the area of Bornholm Island and southwest of Liepaja.

Have the submerged chemical weapons lost their lethal properties? This question is extremely important. Some experts today deny their potential danger, saying that decades have gone by, that the casings of the shells, bombs, and containers have rusted, and that on contact with the seawater their contents could have rapidly decomposed. However, German chemist K. Los, a well-known specialist on synthetic toxins, wrote back in the 1950s: "In the process of destroying stocks of toxic substances after World War I and World War II, it became necessary to conclude again and again (a conclusion apparently at odds with laboratory results) that dichloroethylsulfide (mustard gas—author) loses its chemical properties very little. Even under the effect of a layer of rainwater, the toxic substance remains intact for a number of years." The scientist did not rule out the possibility that mustard gas could affect man's genetic code.

The prediction of Colonel Aleksey Sinitsyn, head of a department at the Chemical Protection Military Academy, is also far from optimistic assertions:

"Of all the toxic substances submerged in the munitions, the most dangerous is mustard gas. It is toxic for decades and dissolves in water poorly. On leaking from shell, bomb, and mine casings destroyed by corrosion, it will settle onto the bottom in large concentrations, mix with the silt, and poison all living things in the area. It is impossible to determine the scale of the ecological catastrophe.

What can be done about the toxic substances dumped into the Baltic? Leave everything as it is, or immediately set about searching, raising and recycling the toxic substances? There's no simple answer. Nevertheless, doing nothing is probably not the best option we can come up with. By 1995 to 1997, the shell and container casings will rust through completely. In specialists' opinion, a massive discharge of toxic substances is inevitable.

There is another alternative—conducting a comprehensive study. Incidentally, this point of view was also supported by former FRG Defense Minister Stoltenberg, and it is also shared by the Russian government. The latter has charged the Okeantekhnika [Ocean Equipment] Association to draw up a program for the ecological protection of the Baltic Sea, including the recovery of submerged vessels and the removal of dumped munitions.

"But we do not support rash actions," said association executive director Yuriy Semyonov. "First, I think, we have to determine with the greatest possible accuracy the locations where the munitions were dumped, their condition, and whether or not toxic substances are leaking, and to find out how they are affecting the sea flora and fauna. We are going to try to accomplish these tasks on expeditions. How things will go from here and what sort of ecological program will be deemed best will be up to an independent expert commission.

"Taking advantage of the opportunity, we would like to appeal through RABOCHAYA TRIBUNA to anyone who has knowledge about the dumping of toxic substances in the Baltic and other Russian seas: Your testimony could help us in our work."

[Caption under map illustration: The approximate areas in which toxic substances were dumped into the Baltic have so far been "calculated" only by activists from the environmental protection movement. Our military departments continue to claim with enviable persistence that no documents survive in the archives. But RABOCHAYA TRIBUNA's editors know that the General Staff has the coordinates of the chemical munitions that were dumped after the war.

This is why we are publishing only a diagram provided by the St. Petersburg Greens. It shows the work results of the United States, Great Britain, and the former USSR.]

Russia Cannot Afford To Raise Sunken Submarine

PM1404155992 Moscow KOMSOMOLSKAYA PRAVDA in Russian 14 Apr 92 p 1

[Untitled ITAR-TASS report under the "Facts Only" rubric]

[Text] Rear Admiral Valeriy Aleksin, chief navigator of the CIS Navy, believes that there is now no need whatever to raise the "Komsomolets" nuclear submarine which sank 7 April 1989 in the Norwegian Sea. In

response to a question from an ITAR-TASS correspondent at yesterday's press conference at Navy headquarters, timed to coincide with the third anniversary of the sinking of the "Komsomolets," he noted that Russia simply does not have the \$300 million required by a firm of Dutch contractors to carry out this complex technical operation.

High Radiation Levels Found on Kola Peninsula

LD2804224592 Moscow Teleradiokompaniya
Ostankino Television First Program Network
in Russian 2011 GMT 28 Apr 92

[From the "Novosti" newscast]

[Excerpt] It must be said that, from the very start of Yeltsin's tour of the North, the ecological theme has been present in his conversations. The problem of the destruction of the environment is strongly alarming inhabitants of the northern region. Here is a report by our correspondent about these problems.

[Correspondent L. Obukhova] The Maritime Inspectorate has drawn the conclusion that the ships of the Northern Fleet represent an ecological danger.

Today, the Kola Gulf is on the brink of an ecological disaster. Both the presence of the atomic ice-breaker fleet and of naval submarines are having an effect here. It is reassuring that Oleg Yerofeyev, the Fleet's new commander, started his appointment with introducing ecological order. As early as this summer, according to his statement in the press, all nuclear shells of underwater and above-water submarines [podvodnyye i nadvodnyye submariny] will be dispatched to the depots and each year 10 atomic submarines will be scrapped. Well then, we will see what we will see.

And, meanwhile, having visited the (Portsnikha) former military base on the coast of the Barents Sea, we saw for ourselves what the military are leaving behind: 600 Becquerels—such is the result of checking random samples of soil and water for strontium taken here. By the way, any planned or forced shutdown of a nuclear reactor, both on submarines and at the Kola nuclear electric power station, will result in the emission of nuclear discharges into the atmosphere of the North. Invisible death is hovering above the Kola land and radioactive spots from 600 to 900 Becquerels were found in the south on the Kola coast. This is higher than any maximum permissible international norms. And all this is not arousing the alarm of the local population. [passage omitted: man asked by correspondent in snowmobile whether he is aware of the increased radiation background, replies this is the first time he hears this and adds that it does not concern him] [Video: navy ships in port, buildings; former base on Barents Sea coast]

Ecologists Measure Pollution From Novaya Zemlya Nuclear Tests

PM0505084192 Moscow Teleradiokompaniya
Ostankino Television First Program Network
in Russian 2000 GMT 1 May 92

[From the "Novosti" newscast: Video report by L. Obukhova and V. Galnykin]

[Excerpt] [video shows bay and beached vessel] [Obukhova] This is the first time that our program has carried a report on the results of the ecological expedition to Novaya Zemlya, Franz Josef Land, and the Kola Peninsula. The international ecological expedition included ecologists from the United States, Germany, Poland, Norway, and Russia.

Man-made pollution in the Arctic amounts to 600-900 becquerels; there are samples of strontium and cesium in the soil and seabed deposits. After analyzing their findings, today's ecologists have concluded that the results of the nuclear explosions on Novaya Zemlya have had an impact on living organisms in the Arctic within a 2,000-km radius.

Apart from Novaya Zemlya, radioactive impurities have been left by nuclear submarines, and all living organisms have reacted to the environmental situation that has developed in the North. Nuclear tests were carried out depending on the weather: Scientists would wait a month or two for southerly winds, then there would be an explosion, and the radioactive cloud would be carried northward. This is why the ecologists recorded huge levels of radioactive contamination in Franz Josef Land and on the Kola Peninsula.

Russia Seeks To Restart 'Simulator' Reactors in Estonian Port City

PM0505084992 Moscow Teleradiokompaniya
Ostankino Television First Program Network
in Russian 2000 GMT 1 May 92

[From the "Novosti" newscast: Video report by unidentified correspondent]

[Text] [video shows submarine] [Correspondent] Russian Government representatives want the nuclear reactors at the former Soviet maritime port of Paldiski in Estonia to resume work. This base is the only center for training nuclear submarine crews and, according to Russian officials, the use of simulator reactors at Paldiski makes it possible to avoid accidents on ships. DAGENS NYHETER reports that all these reports have caused bewilderment and alarm among specialists in Sweden and Estonia who thought that the reactors in Paldiski had been shut down forever. [video shows shots of submarines in harbor]

Deputies Warn Against 'Arctic Chernobyl'

*LD2104131192 Moscow ITAR-TASS in English
1220 GMT 21 Apr 92*

[By ITAR-TASS correspondent Lyudmila Yermakova]

[Text] Moscow, April 21 (TASS)—“We have already come close to an Arctic variant of Chernobyl,” a Russian deputy warned the congress on Tuesday, describing the ecological situation in the extreme north of the country.

Vladimir Uvachan from Evenkia and many other deputies from the Russian extreme north addressed the congress with a demand to work out a new state policy toward the region.

“You will find here (in the north) more than in the International Monetary Fund” [as received], deputy Pavel Lysov said, inviting the Russian president to visit the city of Magadan.

Additional payments to people working in the north are “good investments in the future of Russia,” Albion Brechalov from the Taimyr Peninsula believes.

However, at present the region should be proclaimed a zone of ecological disaster to prevent its imminent collapse, said Valeriy Churilov from the city of Khanty-Mansiysk. “The north should not be developed, it should be closed and cleaned,” he argued.

The congress, which discussed the situation in the extreme north of the country throughout the whole of the morning session, is expected to adopt a resolution on the issue in the afternoon.

Russian, U.S. Scientists To Cooperate on Pacific North Studies

*LD2104223192 Moscow ITAR-TASS in English
1208 GMT 21 Apr 92*

[By ITAR-TASS correspondent Alla Prozorova]

[Text] Vladivostok, April 21 (TASS)—President of University of Alaska Jerome Comisar and head of the Far Eastern Department of the Russian Academy of Sciences, Academician Georgiy Yelyakov believe that cooperation of American and Russian scientists in the studies of the Pacific North can be effective. They discussed in Vladivostok the programme of the activity of the recently formed Joint Scientific Centre “The Arctic” comprising the problems of the region—from the studies of biological resources and their rational use to environmental protection and health services.

They discussed prospects for joint geographic monitoring in the northern part of the Pacific, specifically monitoring of its radioactive pollution. Jerome Comisar mentioned the possibility of partial financing of Russian research in the area.

The following of natural disasters—tidal waves and quakes and timely warning of the danger require joint

efforts, Yelyakov told ITAR-TASS. He believes the computerized databank being formed jointly will assist both sides.

The partners, because of geographic proximity, decided to make the proposal that all Russo-American scientific contacts be coordinated by “The Arctic” centre. An electronic communications system is being established for contacts between scientists in the two continents.

Shcherbak on Problems Facing Ukraine's Environment Ministry

*92WN0463B Kiev GOLOS UKRAINY in Russian
28 Feb 92 p 16*

[Article by Leonid Gashin: “Environment Ministry: From the Defensive to the Offensive”]

[Text] Recently an expanded session of the collegium was held at Minpriroda [Ministry for Protection of the Natural Environment]. Taking part in it were members of the Standing Commission of the Supreme Soviet on Questions of Ecology and Rational Use of Natural Resources, and the heads of oblast environmental protection administrations.

Minister for Protection of the Natural Environment Yu. Shcherbak gave a detailed analysis of the ministry's work for the past year, and reported on the basic directions of action for the next. He described structural changes which had taken place following reorganization of the former Goskomprirody [State Committee for Environmental Protection] into a ministry, cadre work, the beginning of ecological actions, participation in solving legal problems of the ecology, conducting ecological monitoring, expert activity of the ministry, international cooperation and so on. “Minpriroda today,” in the words of Shcherbak, “reminds one of the construction of a square, at which the initial work cycle is being completed.” He defined the results of the ministry's work as “not consoling.”

The ministry was unable to employ economic levers of influence in environmental protection activities. This, among other things, is still hindered by the general economic uncertainty. A planned operational reaction group exists only on paper. To this day, the guardians of the environment [prirodookhranniki] are not receiving the proper amount of help from the guardians of the law [pravookhranniki], as a consequence of which the requirement for mandatory punishment is not being carried out. Ministry officials have been too obliging in their interpretation of the ban on shutting down enterprises. It is annoying that the environmental protection construction situation has become much worse. Out of 37 planned sites, only two have been put on-line. Occasionally because of long-term violation of the operating rules for environmental protection installations, the threat of an accident looms, which the heads of enterprises employ for blackmail, and demand permission for illegal discharge of harmful substances into water reservoirs.

Among the reasons which bring about the rise of these and other negative tendencies in the work of Minprirody, the minister cited objective factors, such as a general decline in discipline in society, the loss of work incentives, and the confusion and lack of faith of certain leaders in connection with the reorganization of state organs. Moreover, the Ukraine as a whole has not turned to face the problem of survival in conditions of ecological disaster.

Shcherbak called to the attention of the People's Deputies of the Ukrainian Supreme Soviet attending, the fact that the time has come to evaluate the pace of introduction of the Law on the Protection of the Natural Environment, for certain of its statutes have not been carried out to this day, and certain ones cannot be carried out. It is also necessary to exert influence on the formation of the budget for the purpose of implementing the principles contained in the law. "Ecological" agreement of laws which are being adopted is a vital necessity. For example, there are significant discrepancies in the laws on protecting the natural environment, on local Soviets and local self-government, and on the system of taxation...

Summing up the results, Shcherbak stated that the staff of the ministry has not become a strategic headquarters for managing the natural environment, and oblast administrations have been unable to step up their monitoring activity, as a result of which they have had to be content with the role of observers, and have been unable to cross over from defense in-depth, and take the defensive against the despoilers of the environment. Incidentally, he noted, next year must become a turning point in that very direction.

Conference Views Problems of Yavorivskiy Military Test Site

*AU2204171792 Lvov ZA VILNU UKRAYINU
in Ukrainian 2 Apr 92 p 3*

[Commentary by Myroslav Paranchak: "What Will Be the Fate of the Test Site?"]

[Text] The Lvov Oblast Peace Council, the Ecological Commission, and the Peace Fund have organized a "roundtable" conference involving representatives of organs of power, public organizations, first and foremost, Rukh [Ukraine's People's Movement for Perestroika], and military specialists to discuss the problems of the Yavorivskiy military test site.

Information based on archival documents and reliable historical facts has been submitted. The actions carried out by the command of the Kiev Special Military District in 1939-41 and by the Ciscarpathian Military District, jointly with the People's Commissariat of Internal Affairs, during the postwar years on the territory of the present test site amount to 500,000 crimes. Without coordination with organs of local power, wide-scale deportation that involved undeniable violations of human rights, was practiced. It affected 150,000 citizens.

Fifty-four villages were destroyed, 300,000 homes burned down, 20,000 memorials, and eight churches and cemeteries, as well as schools reduced to debris. The present villages of Kunyn, Mokrotyn, Krekhiv, the settlement of Maheriv, and others were also damaged. In this way, more than 40,000 hectares of land were "prepared" for the needs of the Soviet Army. This was done with particular cynicism and cannot be justified by anything, because a part of the unique Roztochchya zone was reduced to a desert, a territory on which an original culture and way of life had prevailed for centuries.

During military training in which troops of the Warsaw Pact countries also participated, the central zone of the test site was destroyed to such an extent that it cannot now be used for any national economic purposes. The uncontrolled felling of trees and the contamination of rivers and soil repeatedly gave rise to spontaneous protests on the part of local residents. However, that was the epoch in which Moscow generals had the last say.

Only now has it become possible to give an objective assessment of the test site's history and reach an optimal compromise with regard to its fate. Nobody denies the fact that now the Ukrainian Army will need such facilities. However, the majority of specialists believe that a part of the forest, in particular 11,000 hectares of it, may be given to the "Roztochchya" national park for the needs of the national economy and for building health resorts. Military specialists of the Ciscarpathian Military District cannot, as yet, take a distinct stand on this question, because it is not known how the processes of building the Ukrainian Army will develop and what units will be stationed in Lvov Oblast. Nor can we ignore the demands of the deported people who demand material and moral compensation.

The participants in the conference appealed to Ukraine's president, minister of defense, and minister of environmental protection with a demand to consider the problems of the Yavorivskiy test site at a government level.

Commission Formed To Monitor Ecological State of Dnieper

*AU1604172592 Kiev Radio Ukraine World Service
in Ukrainian 1345 GMT 15 Apr 92*

[Text] The President of Ukraine Leonid Kravchuk issued a decree on the creation of an extraordinary commission for studying the ecological state of the Dnieper River and the quality of the drinking water. The decree provides for the creation of an extraordinary commission for questions of the ecological state and quality of the drinking water subordinate to Ukraine's president.

Shcherbak Assesses State of Ecology in Ukraine *Kiev MOLOD UKRAYINY in Ukrainian 17 Apr 92 p 1*

[Article by Oleh Strekal: "Yuriy Shcherbak: 'My Optimism Was Premature...'"]

[Text] With these words the Minister on Questions of the Protection of the Environment began a press conference devoted to ecological problems in Ukraine.

The slide toward an ecological catastrophe in the republic is continuing. Neither the ministry nor the state has been able to tangibly influence this dangerous tendency in the past year. A certain decrease in toxic emissions by the "Vynna" concern was not due to the achievements of the environmental protection services, rather this was because of the economic crisis: the water polluters are cutting their production and many of them are closing. This is the sole reason for ecological progress.

Ecological, economic and social difficulties in 1991 have resulted in the actual beginning of the dying out of the Ukrainian people. The number of deaths exceeded births by 50 thousand.

He acknowledged the fall in the popularity of the "Green" movement as well. Attention paid to the state of the environment is declining in the population as well as among the authorities. This turning away is most noticeable in the highest levels of the government. The Supreme Council forbade ecologists to shut down offenders without the permission of the Cabinet of Ministers. An insignificant fine for water pollution has been fixed: only 5 percent of the income of an enterprise. This means that environmental protection inspectors practically speaking are unable to punish offenders.

This year the budget of Environmental Protection Ministry is smaller than during the time of "stagnation," in real terms of course.

Yuriy Shcherbak delineated the special priorities of his office, since progress on all fronts is not within the power of Ukraine today. In the words of the minister, the priorities are the overcoming of the consequences of the Chernobyl catastrophe, the saving of the Dnieper and the halting the ecological degradation of the Dnieper-Donetsk region.

The transfer of toxic substances to its territory has also become a danger for Ukraine. There are already known cases when enterprises in the Transcarpathian and Lvov Oblasts, which are working jointly with foreign firms, have accepted toxic substances from them "for storage," poisoning the population and earth of the republic.

The minister quite critically evaluated the activities of his organization. Granted, the environmental protection agency succeeded in doing quite a bit. Its international connections made it possible to immediately obtain a 100 million dollar credit from the World Bank for specific ecological programs in Ukraine. A draft was worked out for a joint Ukrainian-American informational-educational center and preparations are proceeding for the conclusion of a declaration by the six Black Sea countries for the improvement of the ecological situation in that basin.

Specialized scientific centers are being created, various regions are being examined by experts and a powerful legal basis for environmental protection activity is being elaborated.

But nonetheless... "I don't understand why these people have not revolted," said one of the American scientists after having visited a typical industrial center in the Donbass. Unfortunately, things have come to such a position that in five years he will be able to ask the very same question.

Scientist Reviews Prospects on Chernobyl Situation

*AU2204111892 Kiev Radio Ukraine World Service
in Ukrainian 1330 GMT 21 Apr 92*

[Text] A sorrowful date is approaching—the sixth anniversary of the Chernobyl catastrophe. Our Kiev correspondent Eduard Kotenko has the microphone.

[Eduard Kotenko] In Ukraine, the entire next week will be marked by this sad event. Evening ceremonies commemorating the Chernobyl catastrophe will be held in many places, bells will chime for Chernobyl, and other activities will be conducted. Charity concerts will be organized for the benefit of those children and adults who were exposed to Chernobyl radiation. A high-level scientific conference on medical problems related to the explosion at the Chernobyl Atomic Electric Power Plant on 26 April 1986 will be held in Kiev. Civil funeral rites for those who were killed by radiation will be conducted in all churches.

A roundtable discussion has already taken place in the Kiev Palace of Scientists of the Ukrainian Academy of Sciences. Its theme was as follows: Ecology and Technological Culture—the Echo of Chernobyl. Scientists, specialists in the history of science, and journalists not only discussed the causes of the tragedy and its socioeconomic, ecological, and medical consequences, which are becoming increasingly acute and serious over the course of time. They also analyzed the short-term prospects of resolving the Chernobyl problems. This is the opinion of Dmytro Mykhaylovych Grudzynskyy, corresponding member of the Ukrainian Academy of Sciences.

[Begin Grudzynskyy recording] The sarcophagus is not something very pleasant at all. For us, it is a facility whose behavior is not quite clear. Why? It contains an enormous amount of radioactive waste. It consists of alloys of [words indistinct] that is a very hard material. These are the remains of the reactor that were there. All these materials were raked up, and our boys ran around it and threw all this radioactive debris there, collected it and created this concrete structure, which is very heavy and rests upon weak soil. It is gradually sinking and gradually turning. A huge block weighing more than 1,000 tons hangs slantwise there. It may fall down at any moment. If it does fall down, it will raise so much dust that, again, it will not be good.

Something must be done about it. An international competition was announced, and various firms are beginning to offer their services in order to build this Sarcophagus-2. However, it will have to be dismantled in any case, because no matter how many shells are created around it, it must be dismantled. Why? Because it contains a great radioactive mass. If there is a serious situation such as a major earthquake measuring more than 4.5 or 6 points [on the Richter scale], then there is a growing probability that in the course of an earthquake and the associated displacement of masses, a subcritical mass may accumulate that may cause an explosion. [end recording]

In the present difficult situation in which Ukraine has found itself as a result of the global technological offensive against nature and man, and especially following the Chernobyl radioactive contamination, this well-known biologist finds it necessary to see to it that in state economic policy preference is given to resolving, first and foremost, ecological problems.

[Begin Grudzynskyy recording] If priority is not given to ecological issues, this will be the end. Why the end? Because, the birthrate in Ukraine is already lower than the death rate. For example, the birthrate is 13.1 per 1000 persons and the death rate—15-17. Whereas it only applied to eight oblasts three years ago, now this has become nationwide, that is to say, degeneration has set in. I hope that proper legislation will be created. We need to create such legislation that would promote our ecological policy. [end recording]

This was an interview with Dmytro Grudzynskyy, corresponding member of the Ukrainian Academy of Sciences. I will remind you that at the Chernobyl Atomic Electric Power Plant preparations are currently under way for its final closing down in 1993. This is provided for by the resolution issued by the Ukrainian Government.

However, the decision adopted by the government is regarded as hasty at the plant itself. As stated by Serhiy Parashyn, deputy director general of the production association of the Chernobyl Atomic Electric Power Plant, the closing down of the plant is not a simple matter both in technological and social aspects. There is still a lack of experience, suitable projects, and technology. Nor, in his opinion, has the social aspect been taken into account. After the 1986 accident, specialists from all over the former Soviet Union arrived there. They were promised normal conditions for work and life. When the plant is closed down, the problem of their employment will become acute.

Health Minister Quotes Statistics on Chernobyl-Related Diseases

AU2304102592 Kiev Radio Ukraine World Service in Ukrainian 1300 GMT 22 Apr 92

[Extract of report delivered by Yuriy Spizhenko, Ukraine's minister of health, at the medical conference

on Urgent Problems of Eliminating Medical Consequences of the Accident at the Chernobyl Atomic Electric Power Plant in Kiev on 21 April—recorded]

[Text] Compared with preceding years, one can clearly see a general trend toward a deterioration of the health of the population that was affected by the catastrophe. The leading place in the disease structure is accounted for by diseases of the respiratory organs as a result of acute respiratory infections. There follow diseases of the cardiovascular system and of the nervous system. In the disease structure in children, the first place is occupied by respiratory diseases, second by diseases of the digestive organs, and third—diseases of the nervous system.

Starting from 1989, an increase in cases of cancer of the thyroid gland in children was noted. Between 1981 and 1985, there were 25 such cases, whereas between 1986 and 1990—58. The highest rate of disease in 1990 and 1991 was recorded among the children of Kiev, Zhytomyr, and Chernihiv Oblasts.

An analysis of the structure of the general death rate indicates that in 1991, 16,073 persons died. Among the causes of death in adults, the leading one is diseases of the cardiovascular system, second malignant growths, and third—injuries and poisoning. Among the causes of death in persons who took part in eliminating the consequences of the accident at the Chernobyl Atomic Electric Power Plant, injuries, poisoning, and accidents are the most common ones; then there follow diseases of the cardiovascular system; and then—malignant growths. In the structure of the death rate among children, first and second places are occupied by congenital traumas and prenatal pathology.

Among the causes of death among children over one year of age, the first place is occupied by accidents (42.8 percent), second by malignant growths (20.6 percent), and third—by congenital defects (9.3 percent).

Ukraine Drafts Longterm Program on Chernobyl Consequences

LD2204214792 Kiev Radio Ukraine World Service in English 0000 GMT 22 Apr 92

[Text] A long term national program of liquidating the after-effects of the Chernobyl disaster and social protection of those who suffered as a result of the accident has been drafted by the republic's ministry in charge of the Chernobyl accident. The program is to be realized by the year 2000. Its provisions embrace questions of scientific research, nature and population protection.

Ukraine's Chernobyl's Death Toll Over 6,000

LD2204184892 Moscow ITAR-TASS in English 1732 GMT 22 Apr 92

[By UKRINFORM correspondent Aleksey Petrunya]

[Text] Kiev, April 22 (TASS)—From 6,000 to 8,000 people have died in Ukraine as a result of the 1986

Chernobyl nuclear power plant disaster, Ukrainian Minister for the Chernobyl Cleanup Georgiy Gotovchits told reporters here today.

Gotovchits was speaking at a press conference marking the sixth anniversary of the disaster.

Ukraine needs Western aid and technology to battle with the aftermath of the accident, he said.

Death rates among people who took part in cleanup operations are 3 to 5 times higher than among their peers, the minister said.

All units of the Chernobyl power station will be shut down by 1993, he said.

Chernobyl Report Doubles Byelarus Damage Estimate

*LD1404193792 Moscow ITAR-TASS in English
0755 GMT 14 Apr 92*

[Text] Minsk, April 14 (TASS)—The damage to Byelarus caused by the Chernobyl nuclear power plant accident in 1986, the world's worst nuclear inferno, is much bigger than was announced and amounts to 200 billion rubles, exceeding official estimates more than twofold, experts from the Byelarusian Institute of Economics said.

The institute has developed a new method of calculating the damage and stressed the need to reconsider the Chernobyl cleanup program.

However, experts said their analysis is incomplete because there is no information on genetic, psychological, social and ecological consequences of the disaster.

'Massive' Increase in Thyroid Cancer Expected in Byelarus

*PM1904182592 Moscow IZVESTIYA in Russian
16 Apr 92 Morning Edition p 2*

[Nikolay Matukovskiy report: "Secret Figures Made Public in Byelarus"]

[Text] Minsk—The international Congress on Chernobyl organized by the Byelarusian "Children of Chernobyl" charitable foundation in conjunction with non-governmental organizations from Europe, America, Asia, and Australia has begun work in Minsk.

The general theme of the congress is the world after Chernobyl. The 113 participants in the congress are to discuss the scientific and global economic aspects, as well as the medical, biological and sociopsychological consequences of the disaster. One of the most important topics at the congress is the subject of the world community's responsibility for the future of the children of Chernobyl.

It is with this subject that another event at the Byelarusian parliament is linked. Candidate of Sciences A. Volkov, a people's deputy who is studying problems of

radiation medicine, circulated as an official document a statement citing tragic statistics that were secret until quite recently.

As of 1 January almost 1,700 thyroid cancer patients, including 55 children aged 6-12, were on the republic center's books. Over the last few months another 299 people, 52 of them children, have been recorded. These are only cases that have been detected and "officially" counted. There was not a single case of childhood thyroid cancer in the 20 years before Chernobyl in Byelarus and only five cases were detected among adults.

It transpires that this is only the tip of the iceberg. Almost 200,000 Byelarusian children now have enlarged thyroids. So a massive increase in the incidence of disease should be expected.

Byelarus Supreme Soviet Adopts Environment Law

*LD2404125792 Moscow Programma Radio Odin
Network in Russian 0800 GMT 24 Apr 92*

[Text] The Byelarus parliament adopted a law on environmental protection in the first reading. For the first time, the document records the right of citizens to a healthy environment which is beneficial to life. For the first time in legislative practice, it is envisaged that individuals deliberately distorting and concealing information on the state of the natural environment will be made answerable in keeping with the republic's legislation.

Moldovan Minister Wants Full Membership in Black Sea Conference

*AU2204190992 Bucharest ROMPRES in English
1744 GMT 22 Apr 92*

[Text] Bucharest, ROMPRES, 22/4/1992—It is not fair from an ecological or international law point of view that the Republic of Moldova has to take part in a conference on the protection of the Black Sea as an observer, the Moldovan minister of the environment, Ion Dediu told ROMPRES on 22 April.

He specified that a recent Bucharest conference on the protection of the Black Sea against pollution had given his country observer status even though "we too pollute the Black Sea through the Dniester and the Danube, and should therefore share the problems with the countries on its rim."

The Moldovan minister's statement is backed by the Romanian minister of the environment who supports Moldova's bid for full membership of the convention.

On Romanian-Moldovan cooperation on the environment, Mr. Dediu said that, just like in other areas of the economy, the two sides pursued a gradual integration through the formation of similar organisms, the making of similar laws, and joint ecological management.

Environment Minister on Dilemma of Restarting Armenia's AES

92WN0463A Yerevan EPOKHA in Russian
20 Feb 92 p 4

[Interview with Environment Minister Karine Danielyan, by Em. Mkrtchyan: "Ecologists on the AES"; date and place not given]

[Text] The euphoria of the battle for purity in the ecology and safety for the people has spawned its share of folly. Now we are burning with a blue flame, and those who recently inflamed our passions are already crowded around the state feeding trough, and are even riding around in their own Mercedes. Well, let it pass; nature, if not the people, seems grateful to them. And what of the people? The people are demanding heat, work and wages. And now, you see, they have taken thought as to how to turn the clock back, and how to feed the people and keep them warm: to start up the AES [nuclear electric power station] which had been closed down, and put into operation the production that has already been nationalized. Yes, the ordeal of power is a heavy burden.

Karine Danielyan, former deputy chairman of the Yerevan City Executive Committee, who came to the levers of power along with a pleiad of new politicians, is today Environmental Protection Minister of the Republic of Armenia. But unlike many of the "new" but incompetent leaders, who are at times simply dumbbells, Karine Danielyan is a well-known person who is respected among scientists and ecologists. In spite of her extremely busy schedule, she agreed to meet with us and talk for awhile about the most important thing—on the possibly of starting up the AES.

[Danielyan] I am convinced that the shut-down of the atomic power station was completely justified from an ecological point of view, since it should not have been put into operation in Armenia anyway, in this small, overpopulated republic. And that the government has once again turned its hopeful gaze on the AES—is a compulsory step. You see, we are faced with two alternatives—either the AES begins to operate again, or we will lose Lake Sevan. Both the one and the other would be ruinous, both for the environment and for the nation. And although today a governmental commission is racking its brains over this question, I will state unequivocally that to start up the station is very dangerous.

[Mkrtchyan] Foreign experts are working at the station. What is their opinion?

[Danielyan] I have studied their reports. All of them start from the fact that experts do not bear responsibility for consequences. Apparently this is the general provision when compiling an expert analysis. At the same time they offer certain recommendations, and if they are implemented it is possible to carry out start-up of the station. Nevertheless, they note that the start-up is fraught with risk, since even if their recommendations are carried out, the station is not capable of reaching

contemporary levels and contemporary standards of safety. This is altogether natural, since the station was designed long ago, when these standards were not in effect. The draft already contains decisions which make it impossible to reach international standards of safety. For example, the possibility of covering the station with a dome is excluded, and in addition there is no back-up safety system. There is a mass of defects at the station, and correcting them will require investment of about R1.5 billion. But, no matter what happens, I repeat, world standards of safety are not achievable for our AES. And this is already a risk which is aggravated by the proximity of the station itself to a city of 1.5 million people. Not to mention the real danger of seismic activity and the proximity of the AES to an artesian basin. Having opened the station, we are faced not simply with ecological catastrophe, but with the problem of whether our nation will exist or not; whether Armenia will be or not be.

In my conclusion on the question of opening the station, I stated that we must not make the decision to start the station on our own volition. We must put the question to the people in a referendum—but only after we have objectively depicted, on the one hand, the degree of risk in starting up the AES; and, on the other, the economic situation of the republic in conditions of an energy famine.

[Mkrtchyan] Who, in addition to your ministry, is giving its conclusions in this regard?

[Danielyan] I understand what you are driving at. No, there is no conflict in the government with respect to the AES problem. The government is not insisting on its opening. Today the Sanitary-Ecological Service of the Health Ministry, Gosgortekhnadzor [State Mining Technical Inspectorate] for technical safety, a committee on emergency situations, the National Seismic Service, the Ministry of Power Engineering, the Ministry of the Economy, and a number of other agencies are working "around the station" today. We are all working on the choice with the least degree of risk, and a Damoclean sword hangs over us all: it seems a very trite thing to say, but without energy the economy cannot exist.

[Mkrtchyan] Perhaps the history of our AES will tell us something about how safe it is. Have there been instances of "defects" at the station?

[Danielyan] Twice, in the early 1980's. One time there was an instance of overflow of radioactive water, which led to the irrigation of cultivated fields with contaminated water. The appropriate services were urgently called out, and the contaminated layer of soil was removed from the fields. There was one other instance of a possible accident at the station when, incidentally, the fact that there was no back-up safety system was brought out. Fortunately, personnel reacted in time and were able to prevent an accident.

[Mkrtchyan] If the AES does not begin to operate, does that not mean that we will continue to drain Lake Sevan?

[Danielyan] Alas, our choices are few. We have only recently begun to think seriously about developing small hydroelectric power plants [GES] and alternative energy sources. You see, for a long time the very concept of developing power engineering in Armenia has been based on atomic energy alone. After the AES was put into operation, we were overcome with laziness, and we stopped thinking about the future.

[Mkrtychyan] But construction of water reservoirs and small GES are also undesirable on the ecological plane...

[Danielyan] The fact of the matter is, that any interference with nature produces a negative effect. But if we do not open the AES, if we do not drain Lake Sevan, and do not build small GES—that means we are left with nothing. We, the ecologists, do not set ourselves the task of banning everything. We must find the optimal solutions. Take, for example, the problem of water reservoirs. Not one civilized country can get along without them. But they must be constructed on a high scientific-technical level. And the majority of our water reservoirs, and not only in Armenia but throughout the former Union as a whole, along with a minimal positive effect, produce a colossal negative ecological effect. We not only do not know how to build water reservoirs, but also do not know how to operate them. Today we are earnestly occupied with questions of water reservoirs and small GES in the most serious manner; for in them we see a real alternative to both the AES and the Sevan cascade.

[Mkrtychyan] But if we open the AES, will laziness not once again overcome us, and will we not cease to think and to spend our money on the search for alternatives?

[Danielyan] I hope that they will not open the station. But, in any case, it cannot last long anyway—10-15 years maximum. And life has shaken us up pretty well for past mistakes. Thus, we still have quite a bit of work to do in the quest for what to replace the AES with. For us as ecologists today, in a time of severe economic crisis, it is important to preserve the environment, in order not to find ourselves on the verge of ecological catastrophe tomorrow.

Caspian-Aral Canal Project Planned

92WN0439B TRUD in Russian 2 Apr 92 p 1

[Article: "Settle Down, Caspian"]

[Text] A draft of the Caspian-Aral Canal has been created in Alma-Ata. Its originators intend to resolve two problems at the same time—to save the Caspian region from inundation by the approaching sea, and to resurrect the Aral Sea, because last year alone the level of the Caspian rose by 30 centimeters.

It is proposed that the canal should run from the northern part of the Caspian and extend for 520 kilometers, with a handling capacity of at least 40 cubic kilometers a year. According to specialists, this addition to the 10 cubic kilometers that the Aral Sea is currently

receiving from the Syrdarya and the Amudarya will make it possible within 10 years to restore the dying sea.

Preliminary computations indicate that the implementation of the idea will require 60-70 billion rubles, and the level of the Caspian will decrease by one meter.

Scientists Warn Black, Azov Seas May Suffer Same Fate as Aral Sea

LD0305130292 Moscow ITAR-TASS in English
1059 GMT 3 May 92

[Text] The fate of the Aral Sea may soon befall the Black and Azov Seas as well, Mikhail Vinogradov, deputy director of the Institute of Oceanology, told ITAR-TASS. The institute has carried out a comprehensive research into the Black Sea ecosystem.

It is so far possible to improve the ecological condition of the Black Sea, although that would require huge capital investments. A similar project to purify the great lakes cost the United States and Canada 20,000 million dollars, he said.

Each year the waters of the Dnieper, the Dniester and the Danube bring millions of tonnes of industrial and agricultural waste into the Black Sea. More than 10,000 ships that pass through the Bosphorus every year leave up to 10 million tonnes of oil in the Black Sea.

Comb-jelly that vies with small game fishes in the struggle for feed was brought into the Black Sea from the Atlantic in the 1980s. Big game fishes—bluefish and belted bonito—have almost disappeared, Vinogradov noted.

The overall fish catch in the Black, Azov and Marmara Seas, diminished from 900,000 tonnes in 1985 to 640,000 tonnes in 1989. The catch of some fishes dwindled by a factor of more than 30, Vinogradov said. Fish catch is expected to grow in a year or two but the previous amount will not be reached.

The dolphin stock, which numbered 2.5 million species after the Second World War, has now dwindled to 60,000-100,000.

"Some funds are now allocated for the Institute under the World Ocean Programme. The International Bank for Reconstruction and Development has assigned three million dollars, but this is too little," Vinogradov said.

The Black Sea countries—Bulgaria, Russia, Romania, and Turkey—have organised an international Black Sea expedition with headquarters in Istanbul. Its purpose is to forecast further changes in the ecological situation and to look for ways to improve it.

Kazakhstan Takes Steps To Aid Aral Region Population

92WN0432B Alma-Ata KAZAKHSTANSKAYA
PRAVDA in Russian 5 Feb 92 p 1

[Text of decree signed by Kazakhstan Supreme Soviet Chairman S. Abdildin on 18 January 1992: "On Urgent Measures for Fundamental Transformation of the Living Conditions of the Population in the Aral Region"]

[Text] The Supreme Soviet of the Republic of Kazakhstan notes that, as a result of the continuing drying-up of the Aral Sea, natural and economic conditions in the Aral region have reached a state of crisis; the natural environmental balance has been violated, and the conditions of life and the health of the population have sharply deteriorated.

Decrees passed earlier by the Supreme Soviet and government of the republic relating to the Aral Sea and the Aral region are not being carried out in a satisfactory way.

In the aims of social protection of the population of the Kazakh part of the Aral region and of preservation and gradual restoration of the Aral Sea, the Supreme Soviet of the Republic of Kazakhstan resolves:

1. In accordance with article 49 of the Kazakh SSR law: "On Protection of the Natural Environment in the Kazakh SSR," to declare as an ecological disaster zone all rayons of Kzyl-Orda Oblast and the city of Kzyl-Orda, the Bayganinskiy, Irgizskiy, Mugodzharskiy, Temirskiy, Chelkarskiy rayons of Aktyubinsk Oblast, the Arysskiy (including the city of Arys), the Otrarskiy, the Suzakskiy, the Turkestanskiy (including the city of Turkestan) and Chardarinskiy rayons of Chimkent Oblast, and the Dzhesdinskiy rayon of Dzezkazgan Oblast.

2. That the Cabinet of Ministers of the Republic of Kazakhstan shall take steps to provide benefits and compensation to the population of the Aral region, differentiated for each of the indicated rayons taking account of the degree of ecological disaster.

3. That the Cabinet of Ministers of the Republic of Kazakhstan, jointly with the Academy of Sciences of the Republic of Kazakhstan, shall submit for the examination of the Eighth Session of the Supreme Soviet of the Republic of Kazakhstan a draft law: "On Establishment of Legal, Ecological, and Economic Requirements for Economic and Other Activities, and Also the Social Protection of the Population that has Suffered from Ecological Catastrophe in the Aral Region."

4. That the Cabinet of Ministers of the Republic of Kazakhstan shall take concrete measures:

—for realization of the state and republic program for saving the Aral Sea and restoring ecological balance in the Aral region in the period before 2005. Jointly with interested independent states, to resolve questions

relating to inter-republic allocation of water and the preservation of the Aral Sea;

—for improvement of the food supply, including the provision of ecologically pure food products to rayons in the ecological disaster zone and drinking water for residents and livestock in the Dzhalagashskiy and Karmakchinskiy rayons of Kzyl-Orda Oblast.

5. To consider the activities of the military test area on Vozrozhdeniye Island to be intolerable.

The Cabinet of Ministers of the Republic of Kazakhstan shall study the activities of this test area and submit a proposal regarding its closure to the Supreme Soviet of the Republic of Kazakhstan.

6. That the Cabinet of Ministers of the Republic of Kazakhstan, on the basis of a memorandum on mutual cooperation between the government of the Republic of Kazakhstan and the United Nations Environmental Program (UNEP), shall arrive at a resolution of the question of acceptance of the Republic of Kazakhstan as a member of the UNEP, and also of inclusion, within the action agenda of the UN program for the environment and development, of a new republic concept for restoration of the natural balance of the Aral Sea basin, for preservation and restoration of the Aral Sea, and for normalization of the ecological, medical and biological, and socioeconomic situation within the Aral region, with corresponding support from the UNEP fund.

7. Supervision of implementation of this decree shall be vested in the Kazakh Republic Supreme Soviet Committee for Questions of Ecology and Rational Utilization of Natural Resources.

Kazakh Administration for Protection of Fish Resources Formed

92WN0432C Alma-Ata KAZAKHSTANSKAYA
PRAVDA in Russian 12 Feb 92 p 1

[KazTAG report: "Kazakh Main Administration for Fish Resources Protection Created"]

[Text] In accordance with a 31 August 1991 decree of the president of the republic: "On Transfer of State Enterprises and Organizations of All-Union Subordination to the Jurisdiction of the Government of the Kazakh SSR," the Cabinet of Ministers has by its own decree abolished the Kazakh and Ural-Caspian Basin administrations for the protection and reproduction of fish supplies and regulation of fisheries (Kazakhrybvod and Uralkasprybvod) of the USSR Ministry of the Fish Industry.

Based on these, a Main Administration for Protection of Fish Supplies and Control of Natural Resource Utilization in Fishery Waters [Glavnoe upravleniye po okhrane rybnikh zapasov i kontrolyu za prirodopolzovaniyem na

rybokhozyaystvennykh vodoyemakh] (Kazglavrybokhrana) has been established under the republic's State Committee for Ecology and Natural Resources Utilization.

The principal tasks and directions of the activity of Kazglavrybokhrana have been defined: development and implementation, together with fish-industry and scientific organizations, of measures aimed at the reproduction and regulation of the commercial fishing in fishing-industry waters; ensuring protection of supplies of fish and other marine animals and plants and their rational utilization within the republic's fishery waters; state oversight of work carried out for the reproduction of fish supplies by fish procurement enterprises, fishing kolkhozes, and other organizations; development, jointly with fish-industry scientists, of regulations for industrial, amateur, and sports fishing in the waters of the republic and their approval following established procedures; publication of conclusions in the area of ensuring the protection and reproduction of supplies of fish and other marine animals and vegetation based on plans for the distribution, construction, and reconstruction of hydraulic installations, enterprises, and other objects releasing pollutants into fishing waters.

Kazglavrybokhrana has been established as a juridical person, which has an independent balance, a stamp with a representation of the state seal of the Republic of Kazakhstan and its name in the Kazakh and Russian languages, and a bank account, and which functions in conformity with the laws of the Republic of Kazakhstan and the Kazglavrybokhrana statute. The head of Kazglavrybokhrana is at the same time a deputy chairman of the State Committee for Ecology and Natural Resource Utilization and a deputy to the republic's chief state inspector for the protection of nature.

Approval has been given to a listing of the institutions and organizations that are directly subordinate to Kazglavrybokhrana, the conditions of pay to its central apparatus, the size of its staff, its table of official positions and the corresponding insignia established for workers of the republic's fish-protection organs, a listing of the official categories of workers of Kazglavrybokhrana who have the right to receive and wear cost-free uniforms and insignia and the norms for issuance of items of cost-free uniform clothing to workers of Kazglavrybokhrana, and also norms for the provision of motor vehicle transportation to the central apparatus and to state fish-protection inspectors.

The State Committee for Ecology and Natural Resources Utilization, jointly with the Ministry of Labor and Finance, has been directed to establish the wage fund for workers of local fish-protection organs and of the Kazakh Production and Acclimatization Station. These institutions are maintained at the expense of the republic budget.

It has been proposed that, within a month's time, the State Committee for Ecology and Natural Resources

Utilization, jointly with the Ministry of Finance, develop and submit for review by the Cabinet of Ministers an instruction defining procedures for awarding bonuses to state and public fish-protection inspectors and for the formation of a special bonus fund for these purposes; Kazglavrybokhrana is to develop and submit for approval by the State Committee for Ecology and Natural Resources Utilization a statute regarding principal directions with regard to protecting fish supplies and controlling utilization of natural resources in fishery waters; the State Committee for Ecology and Natural Resources Utilization, jointly with Ministry of Justice, is to submit to the Cabinet of Ministers proposals regarding implementation of decisions earlier approved by the government of the republic in accordance with the present decree.

The State Economic Committee is required to make advance provision within the state order for the construction of production facilities for Kazglavrybokhrana and for its requirements for special motor vehicles, vessels, and other types of resources, while Kazagropromtehnika is required on an annual basis to allocate Kazglavrybokhrana spare parts for transportation means and to perform major repairs of motor vehicles and other equipment at its subordinate repair enterprises on an equal basis with agricultural enterprises.

Kapustin Yar Test Site Environmental Damage Detailed

92WN0464A Moscow SPASENIYE in Russian
No 8, Mar 92 p 3

[Article by Menslu Dzhyumatova: "Kapustin Yar: A Militarist Picnic on a Peaceful Roadside"]

[Text] The saigaks [Eurasian antelope] have gone and the birds have flown away, but people and wolves remain; 70 percent of the herdsmen have seen electric power lines, but have not seen electricity; How the animal life of the desert is perishing. Do not drink the water from a missile crater.

Menslu Dzhyumatova: before she was elected People's Deputy of the USSR, she was chief physician at the Dzhambul Rural Regional Hospital. During her deputyship she worked actively on the Committee for Protection of National Health at the USSR Supreme Soviet.

There are several test ranges on the territory of Kazakhstan. By what right this land was torn from the world is not known. For that matter, what kind of law is there... One of the ranges is located between Uralsk and Guryev Oblasts, and takes in the territory of Dzhangalinskiy, Dzhyanybekskiy, Maynokskiy and Urdinskiy Rayons. Belonging to the USSR (now - CIS) Ministry of Defense, it occupies 1.5 million hectares of the best pasture land and hayfields. Its name is KAPUSTIN YAR.

A person who has never been on test ranges might think that it is a dead, fenced in field, where missiles and shot-down aircraft fall; where entrance is forbidden to man, birds, animals and insects; and where no economic

activity goes on whatsoever. All that is not so. Not all. And more often not at all so. There are more than 10,000 people in the cattle-herding brigades on Kapustin Yar alone. I was in Urdinskiy Rayon, Uralsk Oblast, for awhile; there among the sand dunes, about 500 cattle-herding stations are scattered. I traveled to Aymeken (which until recently was a closed military zone) and to Khokki-Sore. I conversed with civilian and military people. The latter, in spite of the fact that they recognize the irreparable damage done to everything living, which they caused, consider themselves the permanent and legal users of the land. When was this? In August 1990. But since people are asking similar questions about Kapustin Yar today (and then, either do not receive answers, or they are so vague that you can't call them answers at all); well, for all these reasons I therefore decided to write down these remarks. Just as, while traveling from farm to farm and from rayon to rayon, our little group came to its conclusions.

Here, cattle plagues of unexplained origin are a common thing. The continual reduction of the number of saigaks on this territory was also a common thing. And once they were taken from the places where their forebears had beaten paths for millions of years—they departed. And they departed altogether.

People do not leave like that. According to legend, they had settled these lands since the creation of the world; but the native residents do not have the right to erect houses here, nor manufacturing, nor cultural-domestic facilities. You might say that a test range is a test range, and the army is the army... And you might say something else, in order to justify the bans. For example: "This is dangerous!" And I would even agree with you, if the military had not built themselves splendid houses right next to it, had not laid water and gas lines. In response you might reply that you have pity on the military; you say they lead such a nomadic life, that their families are among the socially unprotected. And I would once again agree; but here I would ask: and who has pity on the herdsmen who live as if in a primitive society, who have seen electric power lines, but have never seen electricity? This was both terrible and wonderful. Representatives of another civilization flew in and began to build something without paying the slightest heed to the aborigines or their centuries-old traditions and culture. And then all sorts of iron things began to fall from the sky. And then marvelous things began to happen, accompanied either by small unexplainable joys, or with equally unexplainable (and therefore even more terrible) misfortunes... A roadside picnic...

The local people were afraid of the newcomers. The army is—taboo. They looked downward when passing columns of trucks. They behaved the same way when soldiers would draw near. And only now (democratization, glasnost—what else is their in our new vocabulary—perestroyka, and growing national self-awareness) they began to understand, that they did not have the right to act this way with them. They did not know that among their Russian neighbors (in adjoining Volgograd

and Astrakhan Oblasts), sampling stations are in continual operation, and information bulletins are published for the populace. There the situation is also far from normal. But at least someone was somehow thinking about the people. But here...

We trudge, trudge, trudge around the test range, walking around the wrecks of missiles and aircraft. Incidentally, several aircraft are completely whole, only the wings are beaten up, or the tail assembly. Fix it up, and fly it yourself, a free herdsman, to a land of happiness somewhere. Or no—ride down the road, like in a great motorcar, since there is oil beneath you. And gas too. Fuel...it's all yours. Only it's out of reach.

One crater, two craters, three, four, five... A lot of craters. The tractor drivers are mowing hay, but the hay-mowers are constantly stopping. Whereas in the average row in Russia there are stones from the earth, here—there is metal.

Well, you might say: what could there be in a crater that is so bad? It is a desert, after all! The rains come and fill the crater with water, and there you have a pond for the cattle. See, an oasis. You'll have to say thanks... And they used to say thank you. And please. Especially in the period between 1982 and 1984. And even in 1987. Entire flocks and herds perished after drinking the water from these "missile craters." Scientists came in from the center of the republic. They all investigated, shook their heads, and went away without giving anyone any information. And then solid people from Moscow arrived. They too looked at everything. And they too went away. The results of the inspections are classified to this day. And do you know what kind of diagnosis they made for the dead animals? An astonishing diagnosis, which must be entered in the medical encyclopedia as a tragic curiosity of the end of the 20th Century: Uralsk Disease; Guryevsk Disease. It is very convenient to give a geographic name to death.

The cattle perished, but no one, naturally, received any compensation whatever. Well, just try to prove that this is the fault of the test range. What kind of disease is shown in the diagnosis?

It has happened that missiles fell directly on the cattle, but even then there was no question of compensation. They even joked, that the locals live off the test range, and should for that reason be paying the range...

They live. And they die too. In fact, the herdsmen and tractor drivers make use of the wrecked missiles and aircraft for economic needs, not knowing whether they are dangerous or not. Someone built himself a barn out of wreckage that never rusts, and forever shines in the sun; others a toilet, another a shower. They actually walk about on the range, as in a field of wonders, pick up and examine perfectly round, heavy metal balls. But they are afraid of them. But other things which seem to be harmless—these they carry off. The equipment operators dragged one huge part off to their workshop, and were using it as a support stand when repairing equipment.

They used it for a long time. And then they needed a piece of metal, and one of the boys decided to cut one off of this large piece. He made a pass with a cutting torch, then a second, and a third, when—there was an explosion. Two equipment operators were killed. Of course, no one took responsibility for their lives.

The idea was, that all these missiles and aircraft were to fall into a salt marsh and sink there. But we observed only that they do not sink. That which we saw was splendidly made, even though 12 to 15 years had passed since the time the hardware had fallen. The rubber on the aircraft wheels was as if it had only come off the assembly line the day before. By what right should the very finest, the highest quality production, produced from the assets of the vegetating peoples of the USSR, sink to the bottom of a marsh, despoiling the earth with who-knows-what (Incidentally, on the Astrakhan side of this same marsh, they extract table salt; the specialists should tell them what the certain instruments on military aircraft are permeated with). Doctors have never had fine instruments, and here there is so much steel, so much titanium, so many marvelous alloys, that there would be enough to furnish entire hospitals! And all we can say is, "Oh!" Or curse someone. It is as if we are not the masters on our own land. But are there really any masters? If even a people's deputy, the highest representative of his voters, are allowed to go some places, and to others not. That means, there were other masters on this land, who do not advertise themselves. They too had their own narrow circle of electors. They had their own fairy-tale for the simple people, and their own truth for their own "not-so-simple" people; but if one is honest, things were not all that complicated with the distribution of people nearby.

Later, after passing through the rayons of Guryev Oblast, after meeting with the leaders and specialists, and after inspecting the test range there too, I became convinced that the situation is the same everywhere. And the people live with a great deal of bitterness and grief. Just imagine, they are extracting oil and gas right in front of you, that you constantly see flaming torches, in which they are using up the energy of the Sun, stored up by the Earth for billions of years, whereas at the same time your house has no heating at all; that in your village infant mortality and congenital pathology is increasing, and that blood disorders and tuberculosis have become as common as in the capitals of ORVI [not further identified]: what would you think about the extra-planetary creatures who spread their strange and terrible picnic on your roadside?

There is a fire on the steppe. It followed some kind of explosion. What is burning? What from? Should we be wary of the smoke? Everyone is silent. It's a secret. A military secret. In 1961 there was a fire on the Altynkulash sector. Since that time, nothing grows on 15,000 hectares. The residents have long noted, that after most tests the grass turns yellow. Why? It's a military secret! We cannot reveal it to anyone, for we cannot find it out

from anyone... Information comes to the surface suddenly, as if from nowhere, as if there were a submarine in the desert. In 1988 the director of the Kyzyltu Sovkhoz, S. Shintosov, sent 50 horses to the meat packing plant, intended for export to France. Laboratory analysis discovered in the horsemeat, radioactive nuclide contamination higher than the maximum allowable concentration. So that is there too? From where?

Certain things are so obvious it is impossible to hide them. For example, the structure of the subterranean waters has been violated. Before, water was located from 20-30 cm below the surface; but now it has gone 1.5 to 2.0 meters deeper. The birds have disappeared; all but the magpies. The wild animals have disappeared; all except the wolves. And there is still the rare gopher that squeaks as it hides from a marsh-otter. And there is still the wise person who tramps across this magnificent land and senses the threat concealed in it. He is very patient, and unpretentious, this native resident. Both here, and in the area of Semipalatinsk Test Range. And this person must be protected. Two popular movements have joined together for this purpose: "Nevada-Semipalatinsk-Naryn," is the name of this symbiosis. Courageous people have undertaken to search for, find and tell the truth. But after all, there are also those who are in possession of the secrets. What prevents them from telling what is vitally important for thousands and thousands of people. Professional egoism? Or are they really extra-terrestrial creatures on these lands? They came, they made a mess, and they forgot about it...

Potassium Cyanide Allegedly Buried at Semipalatinsk

92WN0439C Moscow KOMSOMOLSKAYA PRAVDA
in Russian 11 Apr 92 p 2

[Article by KOMSOMOLSKAYA PRAVDA correspondent Ye. Dotsuk, Alma-Ata, under rubric: "KOMSOMOLSKAYA PRAVDA Investigation: Where Is the Potassium Cyanide Buried?"]

[Text] Two and a half years ago Captain Yekimov retired, but he continues to wear his captain's uniform. At PTU [vocational and trade school] No. 13 in Alma-Ata, he teaches military subjects, which, it is true, they say will be abolished any moment now. But prior to this he worked for almost 20 years at the Semipalatinsk nuclear testing ground.

In 1986 Yekimov became one of the 15 people who still keep one terrible secret about an occurrence at the testing ground. But I am the only person to whom the secret seems to be terrible. Anatoliy Mikhaylovich himself feels that, compared to nuclear explosions, all this is a minor matter.

Carrying out the conditions governing the special secrecy of that operation, he has remained silent until now. The captain continues to this day to speak reluctantly. He thinks things over and chooses his words carefully, justifying himself by stating that now is not the proper

time. I ask him when that time will come. He thinks it will be when the generals start talking.

Six years went by before Anatoliy Mikhaylovich decided that his military secret can turn into a tragedy for certain people.

If it had not already occurred. So he wrote a letter to KARAVAN, a local newspaper.

The captain did not occupy an important position at the testing ground. He worked in the technical supply department. He worked modestly in his own section and did not have any clearance for special secrets. Well, it was no secret that nuclear weapons were being tested at the testing ground. Therefore, if you compare the situation with nuclear explosions, the secret operation in which he was told to participate in the summer of 1986 is actually nothing special from the point of view of the military.

From approximately the 1950's, strongly toxic agents were stored in large quantity in the depots entrusted to Yekimov. They were lethal poisons—potassium cyanide, sodium cyanide, mercury compounds, calcium arsenate. The poisons were brought in from somewhere outside the country, because the seals on the flasks were imported ones. Anatoliy Mikhaylovich does not know the purpose for keeping the poisons at the testing ground. He assumes they could be used in experiments on animals, or possibly the poisons were prepared for scientific experiments which, for various reasons, were not carried out, or that he simply did not know about.

Captain Yekimov heard that the question of how to get rid of the lethal contents of the technical depots arose long ago at the testing ground. The topic of the need to destroy the poisonous substances was discussed repeatedly. It was even dangerous to haul them away in the metal safes in which the flasks were kept. Yekimov knew that several recommendations for destroying the poisons had been considered. One of them was to drop them into shafts together with nuclear charges in the hope that during the explosion the poisons would self-destruct. But they did not take the risk of doing that.

In June-July 1986 a decision was finally made. An order came from Moscow—bury the poisons locally. For that purpose a special commission consisting of 15 persons was created. Anatoliy Mikhaylovich was made a member of that commission only because, by the nature of his job, he had direct access to the poisons and knew their quantity and their place of storage. The person who headed the operation was the chief of one of the departments, Colonel V., whose first name the captain asked not to mention.

As Yekimov recalls, three trenches approximately 1-1.5 meters deep were dug at the burial site, in the test area. The bottom of the trench had polyethylene spread over it. The toxic agents were brought out to the area from the principal base. Enlisted men and officers in the chemical service took part in the operation. Everyone wore gas

masks and protective clothing. The flasks with the potassium cyanide and other poisons, naturally, were not opened, but they were broken by the shovels and the contents poured out into the trenches. Then a special vehicle filled in the trenches. The protective clothing and the gas masks were immediately burned on the spot. A document concerning their destruction was prepared and the spot was carefully leveled so that no one could see where it was. According to Yekimov, it was not indicated on any map. If one imagines the scale of the territory covered by the Semipalatinsk testing ground (approximately 100,000 hectares), to this day even the participants in that long-ago operation themselves probably cannot indicate exactly where those trenches were located...

At that time, only the reserves of potassium cyanide, sodium cyanide, and mercury compounds were poured into them. Approximately 100 kilograms of calcium arsenate remained at the depot. No one knew how to neutralize it. At first they wanted to drill a large number of bore holes and bury several grams of the substance in each of them. But that would have occupied a tremendous territory, and that idea was rejected. It is not precluded that the calcium arsenate is still at the same depot where Yekimov worked.

Captain Yekimov's last recollection of that day is that the poisons had hardly been buried before a herd of sheep that had been grazing nearby started directly toward the burial site. Herds of sheep are encountered frequently in those localities. The officers waved their hands to the shepherds, telling them to keep away. That time the herd bypassed that dangerous spot. But what happened after that? The military left afterwards. They did not even leave a sign after them, with the words "Warning: Deadly Poison!" or put up any barbed-wire fences all around the area...

Water Supply Problems in Turkmenistan Examined

927C0386A Ashkhabad TURKMENSKAYA ISKRA
in Russian 6 Jan 92 p 3

[Article by Kh. Evzhanov, deputy director for research of the Academy of Sciences of Turkmenistan Institute of Chemistry, doctor of technical sciences: "Supply Problems of Pure Water for the Population Are Being Solved Slowly"]

[Text] The problem of supplying the population with clean water is one of the most acute in the region of Central Asia, and especially in our republic. An intolerable ecological situation has developed as the result of an increase in its consumption and of the salinization and pollution of fresh water sources. The salinity of the Amu Darya in the lower reaches of the river sometimes reaches the level of 2-2.5 grams per liter, although the sanitary standard is not more than one gram. Moreover, various toxic substances are present in it: pesticides, defoliants, phenols, heavy metals...

Also, the high morbidity of the population, first and foremost of children and women, especially in the Aral Sea Region [Priaralye], can be explained if one takes into account the fact that water is consumed from open reservoirs and from irrigation ditches in the majority of population centers.

How can people be supplied high-quality water? Some steps are being taken in this regard, but there is much lacking for this work to be expanded. Above all, until now there has been very little information regarding the organomineral components and the various toxic chemicals of all the republic's waters. They have not been classified, they have not been characterized relative to the region of their specific utilization, and an analytical chemistry service network has not been set up.

It is known that collector-drainage water (CDW) [KDV] is the principal source of pollution and salinization of fresh water. Since they cannot be used due to the high content of toxic chemical substances, they are discarded. They are discarded without any purification into the Amu Darya, into the Sarykamysh, and into the desert. If nothing else, this fact indicates the kind of damage they do to the environment: Not less than 10 cubic kilometers of these waters are accumulating annually on the territory of Turkmenistan, if one takes into account the drainage runoffs from neighboring Uzbekistan. Their average mineral content is five to seven grams per liter.

There are many purification methods, but under our conditions, to demineralize water with a salt content of up to 10 grams per liter, which includes most of the CDW according to all technical and economic indices, preference goes to the membrane methods of desalinization, reverse osmosis, and electrodialysis. However, they must be preceded by pre-purification of the water, which, in its turn, requires knowledge of the complete and detailed chemical composition with regard to the content of macrocomponents, elements of hardness, heavy metals, organic contaminants. Moreover, when CDW are demineralized, it is impossible to avoid being left with enormous quantities of residual brine, the chemical processing and further concentration of which remain practically unstudied at the present time.

Nevertheless, the process of accumulating the necessary data is going forward. Work along these lines is being conducted in many scientific institutions, including the Institute of Chemistry of the Academy of Sciences of Turkmenistan, which heads the organization dealing with these problems. What has been done already?

The salt composition of drainage waters formed throughout the entire territory of the republic has been established and classified. The main principles determining the degree of mineralization and the content of contaminants have been identified. The order of crystallization of the salts and the behavior of microcomponents during the concentration of drainage waters through evaporation have been established. The reagents

and sorption methods for the purification and preparation of the water for desalinization by membrane methods have been worked out. The processes of desalinization have been investigated in laboratories and industrial installations. The possibility of reworking the residual brine by solar evaporation to obtain sodium sulfate and chloride has been studied.

Desalinization installations have already been operating for several years near Ashkhabad in the "Turkmengazprom" Production Association [PO] system and in Tilmanskiy Rayon; these installations have a capacity of 10-12 cubic meters per day. They supply the local population, children's institutions, hospitals, and a worker's canteen with conditioned drinking water. There are contracts to put 15 more such installations into operation. The cost of obtaining such water is hundreds of times lower than that which is now realized by the Ashkhabad plant.

Quite a bit has been done at the Institute of Chemistry for the contemporary equipping of physicochemical methods of analysis. The most up-to-date apparatus makes it possible to conduct the most complete mass analytic monitoring of more than 50 principal ingredients of mineralized waters. The complete chemical composition of the drinking waters of Tashauz Oblast has also been studied using such apparatus. However, the Institute's scientists have become concerned by the fact that their research efforts are not finding wide application.

The construction of an all-union experimental and testing complex for the demineralization of collector-drainage and underground mineralized waters should have been completed already in Turkmenistan. The initial data for its planning have already been distributed by our Institute. The complex should become an all-union testing ground for the carrying out of experimental operations and the working out of technological processes and equipment. It has been possible on the basis of the results obtained to distribute technical data and practical recommendations for the planning and construction in the future of large-capacity desalinization stations and water chemistry combines on main-line interceptors. However, at the present time only the planning of the center of the desalinization complex with an output of 1200 cubic meters has been accomplished. There are such stations in many countries of the Near East and North Africa. We have carried out negotiations with foreign companies with the aim of soliciting their participation in these efforts, but due to the lack of foreign currency, they have ended without result.

It is necessary to create a unified specialized center in the republic; the formation of a state scientific-technical "water" ["voda"] program is required for its scientific provisioning. The problem is so urgent that a special resolution on the subject was passed at the recent meeting held at the Institute of Chemistry of the Academy of Sciences of Turkmenistan. Prominent scientists of the country, A. I. Rusanov, Corresponding

Member of the USSR Academy of Sciences and Peoples' Deputy of the USSR, I. I. Lishtvan, Vice-President of the Academy of Sciences of Belarus, and others supported just such an approach to the solution of this problem.

Many scientific institutions are presently involved in our Republic with water-related problems. Such a scattering of scientific forces throughout different organizations produces few results. Many millions in assets allocated from the state budget for the improvement of the ecological situation and the water supply of Tashauz Oblast are being expended without the necessary yield. The trouble is that every sort of organization and institution, including dubious ones, are being attracted from the whole country; their activity is practically unmonitored. A specialized center could concentrate all the scientific forces in order to solve the problem in all its aspects.

It is necessary to begin the training of specialists of the appropriate specialization in the teaching institutes. It is advisable to organize industrial production in the republic to produce water-purification and desalinization apparatuses and other equipment.

Supplying the population with water meeting the State Standard [GOST] is a vitally important task. It is question of the peoples' health. Can there being a more pressing problem than that?

Turkmenistan Seen as 'Hostage' in Iran Nuclear Deal

*MK2604121592 Moscow NEZAVISIMAYA GAZETA
in Russian 25 Apr 92 p 6*

[Igor Zhukov report under "Nuclear Electric Power Station [AES]" rubric: "Long Echo of Chernobyl. Russian Atomic Energy Industry Workers Ready To Build AES for Iran"]

[Text] The accident at the Leningrad AES generated an unexpected response in the extreme south of the CIS. In Turkmenia it stimulated discussion of a question which even quite recently the local authorities did not rank in the category of important problems.

At the end of February a group of seismologists from the neighboring Islamic Republic of Iran, staffers of Iran's atomic center, arrived in Ashkhabad. At the Turkmen Academy of Sciences they met with the leadership of the Seismology Institute and signed a protocol on scientific and technical cooperation. The protocol recorded the sides' commitment to arrange joint work "On evaluating the seismological threat and predicting earthquakes on territories contiguous to the two countries, and on exchanging specialists and noncommercial information." The protocol reflected the partners' wish to present their activity as a UNESCO-sponsored international project to combat natural disasters.

One point in the protocol instructs the Turkmen seismologists "to assist in operations to select sites for Iranian atomic facilities." As NEZAVISIMAYA

GAZETA's correspondent was told by Tachmet Ashirov, director of the Turkmen Academy of Sciences' Seismology Institute, cooperation with the Iranian atomic center began last year and was initiated by Russia. At the invitation of the Russian Atomic Energy Ministry's "Zarubezhatomenergostroy" Production Association Turkmen seismologists went to Iran in December 1991. The purpose of the trip was to provide a seismological report on a site in the southern Caspian region selected by Russian specialists for the construction of a nuclear power station ordered by the Islamic Republic of Iran. The idea behind this project had been discussed by the interested parties several years ago, but it was Russian rather than Union structures that set about the specific implementation of the idea.

After three months' work by specialists and Turkmen seismologists "Zarubezhatomenergostroy" received the requisite findings. They mentioned, in particular, that the locality of the proposed AES construction in Bender-Torkemen, some 50 km from the Turkmen border, is situated in an area of "active current movements and manifestations of destructive earthquakes related to the structures of the Elbrus range in the south, the Kopetdag range in the northeast, and the Great Balkhan range in the north." This zone of two tectonic fractures had already experienced strong earthquakes. The requirements of the International Atomic Energy Association prohibiting AES construction within the range of high seismicity are thereby breached. Turkmen environmental monitoring services also associated themselves with the seismologists' adverse conclusions. According to their data, the locality selected for the AES contravenes a minimum of four of the 24 mandatory requirements regarding the siting of nuclear power stations approved back in October 1987 by the USSR Council of Ministers' Fuel and Energy Complex Bureau.

Today the results of the research are known both in Moscow and Tehran, but they are scarcely capable of derailing the proposed deal. The Iranian side is not concealing its interest in the construction of the AES in precisely this region. As NEZAVISIMAYA GAZETA's correspondent was informed by Nazar Soyunov, a member of Turkmenistan's Presidential Council, during the visit to Ashkhabad the vice president of the Iranian atomic center, Haji Azimu, mentioned the short life expectancy of Iranian gas and the reliability of a source of energy such as nuclear fuel. As local observers believe, there exists a serious political factor which is influencing Iran's choice of site for the AES. Northern Iran is home to a large proportion of Turkmenians, who in 1924 already had their own republic independent of Tehran. Although destroyed in 1925, it left behind it a powerful pull in the direction of separatism. The construction of the AES in the "unfavorable region" will entail the resettlement of some of the indigenous inhabitants into the heart of the country and trigger a counter flow of service personnel for the station,

thereby—according to the intention of the authors of the idea—to some extent extinguishing “undesirable sentiments.”

In this game the Russian atomic energy industry workers have their own priorities. Otherwise deprived of orders, “Zarubezhatomenergostroy” acquires the opportunity to put its financial affairs to rights. It is believed in Turkmenia that for this reason the association’s specialists may disregard the data of the Turkmen scientists by carrying out their own expert appraisal. In these conditions Turkmenia has in store for it by no means the best role of hostage to someone else’s deal.

The Turkmenistan Presidential Council’s Emergency Situations Commission has requested a report from the republic’s experts. It intends to acquaint Russian President Boris Yeltsin with them [as published] during his upcoming visit to Ashkhabad.

EBRD Seeks To Improve Nuclear Safety in Lithuania

*LD1004220192 Vilnius Radio Vilnius International
Service in Lithuanian 2100 GMT 7 Apr 92*

[Text] A letter from Jacques Attali, president of the European Bank for Reconstruction and Development [EBRD], to Lithuanian Prime Minister Gediminas Vagnorius was made public today. The letter also discusses the Ignalina nuclear electric power station. It does not, however, propose to shut down the plant.

In his polite letter, EBRD President Jacques Attali speaks out for using every effort to increase nuclear safety.

As noted in the letter, the EBRD is prepared for close cooperation with Lithuania, Western countries, and international organizations to seek a common goal: to enhance nuclear safety in the region.

The bank will assist, by every means possible, in solving this problem, and will start to analyze the best measures for solving it, notes Jacques Attali.

REGIONAL AFFAIRS

European Countries Face 'Globe-Trotting Garbage' Issue

92WN0453A Paris LES ECHOS in French
9 Apr 92 p 22

[Article by Elie Le Du: "Waste Transportation: A Market With Increasing Allure"]

[Text] Waste removal and disposal is a complex and highly controversial problem, but it is also a market—30 million metric tons in the EEC—and large corporations from around the world are vying for it.

In the countries of the European Community, environmentalists are taking an increasingly combative stand against globe-trotting garbage. Out of caution and discretion, the specialists of waste transfers have preferred not to draw attention to the statistics.

Experts at the OECD, however, estimate that the European Community imports nearly 20 million metric tons of various types of waste every year and exports nearly 10 million metric tons. That means a total of 30 million metric tons coming into or going out of the Community—50 times the tonnage of cargo handled by an airport the size of Roissy-CDG or 10 percent of the annual traffic passing through all of France's ports combined.

The handling and transporting of this unusual cargo is a complex problem that has sparked much controversy. The environmentalists use the term globe-trotting garbage because the Community's waste can travel considerable distances. It is shipped to Asia, East Europe, and the Arab countries. In addition, hazardous waste accounts for as much as 15 percent of the total. Within the Community, most of the hazardous waste to be disposed of comes from Denmark, the Netherlands, Belgium, and France.

At the same time, many view it as an attractive market. In all of the developed countries, the competition for market share is just as keen in waste management as it is in automobiles or cosmetics. Companies are striving to remain dominant in their home markets and at the same time gain entry into the other markets. In France, the three leaders are Onyx (Generale des Eaux), Sita (Lyonnaise des Eaux/Dumez), and Nicollin of Montpellier. The world leader is the American company Waste Management, with a business volume of 7.5 billion dollars.

For the past three years, it has been trying to establish itself on the French market. Most recently, it has set its sights on a group of companies working with SPAT (Parisian Land Development Company) for a business volume of 160 million francs. In 1989, Waste Management was ready to pay one billion francs for Tredi, a specialized subsidiary of the state-controlled chemicals manufacturer EMC, but the government opposed the acquisition. On the other hand, the French company

TIRU has won a share of the household waste market in Massachusetts in the United States. TIRU is a majority-owned subsidiary (51 percent) of EDF [French Power Company] and had a business volume of 500 million in 1991.

Much at Stake

In Europe and elsewhere, the thorniest problems arise in connection with the transporting of waste. The European Community, for its part, has yet to adopt Community-wide regulations governing waste transfers within the Community or to and from outside countries. In Brussels, France and Britain are openly blamed for the lack of progress in this area. That is not surprising as their positions are diametrically opposed to those of the European Commission and Belgium which have asked that waste products be considered the same as conventional products under the rules of the 1993 single market, which call for the unrestricted movement of goods, among other things.

The next meeting is scheduled to take place on 4 May in Brussels. The European Commissioner for the Environment, Carlo Ripa di Meana, is losing patience: "A decision must be made. Time is running out and a good deal is at stake. To remain credible regarding their commitment to regulating the transfer of wastes, the European Twelve must have a common position to present at the United Nations Conference on the Environment and Development which will be held in Rio de Janeiro in early June."

The environmentalists, for their part, hope to obtain at the very least a ban against the exportation of hazardous wastes to the East and to developing countries. The 12 members of the Community are already prohibited from exporting such wastes to the 69 ACP countries (Africa, the Caribbean, and the Pacific) which signed the Lome Convention. As for toxic wastes, Germany has proposed that exports of them be restricted to countries with proven recycling capabilities.

If, that is, their populations are willing...as the Germans have already discovered: In late February, officials at SIMAT decided not to renew their contracts with the German firms that were sending their waste to Saint-Aubin (Aube). SIMAT happens to be a subsidiary of SITA, a company that is certainly capable of meeting all the technical requirements.

The market for transporting waste, it would seem, will depend upon the public's acceptance of it more than on any other factor.

DENMARK

Government's Long-Term Development Plan Viewed

92WN0455A Copenhagen BERLINGSKE TIDENDE
in Danish 11 Apr 92 p 15

[Article by Henning Kristensen and Henrik Larsen: "Plan for Denmark's Way to the Year 2018"]

[Text] The government has presented its picture of how Denmark ought to develop physically and functionally in the Europe of the future.

With its national planning report entitled "Danmark pa vej mod ar 2018" ["Denmark en Route to the Year 2018"] which Environment Minister Per Stig Moller has now presented for debate, the government has focused for the first time on national planning as viewed with a European perspective. At the same time the report shows that in several areas Denmark is well positioned in relation to the other EC countries.

Six overarching goals are laid down as a leitmotif for the physical and functional development and readjustment process: Denmark's cities should have a higher profile in Europe, the Oresund region should be the number one urban region in the Nordic area, Danish cities should be attractive, clean, and well run, and they should be linked efficiently and in an environmentally correct manner to international traffic axes.

Similarly the Danish landscape is to be varied and rural areas are to be alive, and Danish coasts and towns should preserve their special character and be attractive tourist destinations.

The tourism industry in Denmark has experienced an "almost explosive growth" in recent years. For example, the number of nights spent by tourists grew by 33 percent in the period between 1988 and 1991. And when compared with other EC countries, only France and Ireland have experienced greater growth in the tourism sector, a 1990 report shows.

Environment Minister Moller emphasized that from a state level the national planning perspective is a frame of reference for policy, with physical and functional consequences. No demands or obligations are made on local decision-making. It is up to individual counties and towns and to the private sector to act according to the development perspective which the vision contains. Counties and towns have the primary responsibility for planning in their own areas.

"In the years to come, some of the major issues will be about European cities, population development, tourism, traffic, and major investments in the European infrastructure," the minister said. "The report can be viewed as our homework for European cooperation."

There will be great emphasis with respect to development which is environmentally sound. The environment is to be ensured for the generations to come. In the government's opinion, Denmark should strive to be the cleanest country in Europe.

According to the plan, this will affect not only the country's own citizens. It will also mean something if we are to be able to attract tourists and investments to this country.

If we look at the report's figures for discharges of sulphur and carbon dioxide, Denmark scores relatively high

when compared with the northern part of the EC. The major Danish discharges are concentrated around Copenhagen, Odense, Aarhus, and Aalborg.

Nevertheless "for the most part, the air in Denmark is clean," the report states. The reason for this is that, among other things, we are surrounded by water—and the wind carries the pollution away to our neighbors.

With regard to the discharge of carbon dioxide (CO₂), this, according to Danish energy planning, is to be reduced by 20 percent by the year 2005. And there will be help for this goal in the trend of energy consumption, inasmuch as total Danish energy consumption is in fact declining: from 810 petajoules (million-billion joules) in 1972 to 787 petajoules in 1990.

A number of overarching goals for Danish cities is also set out in "Danmark pa vej mod ar 2018." This is so because of the fact that we are en route to a "Europe of Cities," in which competition will occur between major urban areas rather than between countries. For this reason Danish cities ought to cut back on their differences and cooperate across city lines. According to the plan, it is deemed a major asset for the entire country that the capital region come to play a central role in the new Europe. It is therefore the government's aim that the capital be strengthened and remain the number one capital in the Nordic area.

For that reason in the national development plan a map of the Denmark of the future shows the Oresund region as a major European city, four large Danish cities with significant international connections, and a number of cities with international specialties.

FRANCE

Firms Increase Waste Management Research

92WS0399A Paris L'USINE NOUVELLE in French
27 Feb 92 p 20

[Article by Pierre Laperrousaz: "The Race To Treat Waste Is Off and Running"]

[Text] Economical means of treating waste—recycling, neutralization, incineration—have to be found. France's large urban-service companies are in contention for the job.

Brice Lalonde has set a clear goal: France will have to have its waste problem resolved by the end of the century. The two industry leaders, the Lyon Water Company-Dumez and the General Water Company, have gotten the message.

Jerome Monod's group has announced it will spend 31.2 billion French francs [Fr] on waste research and development this year, compared to Fr13.7 million in 1991. Its competitor estimates it will spend Fr80 million to Fr100 million and plans to build a research center in Limay that will keep 20 people busy on a 1992 budget of

Fr15 million. And both of them have just defined their strategy for waste treatment.

France's waste problem can be summed up simply enough: How to convert the 20 million metric tons of household garbage and the 50 million metric tons of industrial waste produced each year into a trickle of "final" residues that are as harmless as possible? For the country's "technical burial centers"—which is what dumping grounds are now being called—will soon be saturated.

General Water and Lyon Water already possess expertise in different stages of the waste-treatment process, including collection, sorting, incineration, neutralization, and burial. But the knowledge is scattered among different subsidiaries, and some of the activities are much more technical than others. For example, explains Georges Valentis, the director of General Water's new research center in Limay, "We have mastered all the steps involved in treating industrial waste, in Sarp Industrie. But we are going to have to implement new collection techniques, such as those involving expert systems, to optimize selective collection."

The diversity of the technologies needed means that operations will have to be somewhat decentralized. And although the two groups have centers for their waste treatment activities—General Water's in Limay and Lyon Water's in Pecq—a large share of the research will be conducted in their subsidiaries. "The development of certain processes such as making waste sites impermeable or neutralizing (rendering harmless) the waste requires field work," explains Francois Fiessinger, who is the director of research at Sita, a subsidiary of Lyon Water Company.

Lyon Water has designated several "centers of excellence" for that purpose. They include Degremont and Novergie for biological recycling, Cofreth for incineration, and France Dechets for neutralization and burial sites.

Creating Shared Research Hubs

Some of the group's other companies, which ordinarily have nothing to do with waste, have also pitched in. For instance, Soletanche, which has considerable know-how in earth stabilization for public-works projects, has just teamed up with Sita to create a joint company, Inertec. Its purpose will be the development of neutralization processes. Lyon Water does lag behind its competitor in that area. Yet "over half the waste now deposited in dumps will have to be stabilized through neutralization a few years from now. That means we must find economical means of doing so," remarks Francois Fiessinger. As for public-works companies such as Dumez, they could incorporate neutralized products into building foundations or embankments.

The diversity of the problems involved has spurred the two competitors to seek expertise from outside their companies: from universities, technical centers, and

manufacturers. Sita, for instance, has just teamed up with Recymet, a Swiss company that owns a technology for recycling batteries and accumulators. It has also just created a joint venture with Rhone-Poulenc for the storage of final residues. Based in Vernon, the company will specialize in using membranes to make waste sites tight, treating water through drainage, and long-term monitoring.

Clearly, the two groups are aiming to develop a whole range of processes. "Selective collection is not necessarily the right answer everywhere," says Georges Valentis. Companies must be able to propose comprehensive solutions: "Customers, especially local communities, are increasingly demanding integrated, optimized lines." And it will take nothing less to stave off foreign competitors, such as the United States' Waste Management, which is insistently knocking at our door.

Industrialists Form New Environmental Organization

92WN0408A Paris *LE MONDE* in French
22-23 Mar 92 p 22

[Article by Roger Cans: "An Industrial Antipollution Lobby"]

[Text] Rarely had so many business executives ever gathered together in the same forum: No fewer than 15 board chairmen and directors of some of the biggest French corporations¹ got together in Paris on 17 March to announce the official creation of the Association of French Businesses for the Environment. For the time being, it is a very selective club, but one that intends to become more and more open to the PME's and PMI's [small and medium-size enterprises and industries]².

The president of the new association, Jean-Rene Fourtou, who is also president of Rhone-Poulenc, explained its four goals: 1) to encourage businesses to become more actively involved in environmental problems; 2) to promote the exchange of experience, both technical and managerial; 3) to support action programs; and 4) to defend the business point of view with respect to protection of the environment.

The third of these goals is undeniably the newest. This will in fact be the first time that French manufacturers will work together on action programs that are not of direct concern to their businesses. For example, Businesses for the Environment proposes to finance cleanup programs at unowned abandoned industrial sites, known as "orphaned black spots."

Blenny: In the opinion of the manufacturers, the existence of these black spots is very detrimental because it reinforces the public's belief that industrial activity is always dirty and polluting. Moreover, for the government and local communities, the sites represent a nearly unsolvable legal and administrative puzzle: Who should

pay to clean up polluted sites that have been abandoned for decades, sites such as the old Nantes gas plants sold to a real estate promoter?

The United States has a "Superfund" law making it possible to appropriate national resources to clean up old industrial sites and dumping grounds. However, enforcement of this law has turned out to be extremely difficult because the search for owners and the identification of those responsible sometimes takes years. Nothing comparable exists in France, whence the government's backing for the Fourtoul proposal. French manufacturers will assume responsibility for correcting past misdeeds or errors of their "absent" colleagues.

The newly-formed association already has a substantial nestegg: 17 million francs, representing the admission fee of the 15 founding companies (100,000 francs each), plus voluntary contributions earmarked for financing special operations (from 500,000 to 1.6 million francs). Fourtoul says that two-thirds of the fund will go towards the action program, which will not be confined to eliminating the black spots. It will finance projects designed by various partners, particularly the new Environmental and Energy Conservation Agency (ADEME).

The Association's fund should grow rapidly because Businesses for the Environment expects to enroll other influential industrialists, those now conspicuously absent, particularly the paper companies. The club will even be open to PMI's and PME's in exchange for a small admission fee based on the company's financial means. In the long run, any business executive should be able to join the club and participate in the program of actions to be decided upon by the next board of directors.

Another of the Association's goals, as Jerome Monod, president of Lyonnaise-Dumez, has stated, will be to provide a means of expression for manufacturers. "Jacques Delors accuses us of not making our point of view heard in Brussels," he said. "We are therefore going to speak out." In President Fourtoul's opinion, such lobbying will support action taken by the Environmental Commission of the CNPF [National Council of French Employers], headed by Michel Pecqueur, also one of the Association's founding members. However, there will never be sufficient means of expression—or of exerting pressure—as the president of Rhone-Poulenc knows only too well. His firm heads up the international SCOPE [expansion not given], whose task it is to make the views of phosphate manufacturers heard.

Businesses for the Environment will also wage "planetary" action by participating in major debates such as the one on global warming and the greenhouse effect. On this point, French manufacturers are following in the footsteps of EDF [French Electric (Power) Company] President Pierre Delaporte, who is waging a fight against a possible tax on carbon dioxide emissions, "a sin against the mind," as he calls it. He believes it would be better, using the same money, to help the Chinese clean

up their thermal power plants rather than forcing the Germans to achieve a 1-point improvement in an already excellent cleanup rate.

Footnotes

1. Liquid Air, the General Water Company, ELF-Aquitaine [Gasoline and Lubricants Company of France], the EDF, EMC, Hydro-Nitrogen, Lafarge-Copee, Lyon Water Company-Dumez, Pechiney, Renault, Rhone-Poulenc, Total, Usinor-Sacilor, Solvay.

2. French Association of Businesses for the Environment, 5, Esplanade Charles-de-Gaulle, 92000 Nanterre. Tel: 47-29-09-29.

GERMANY

New Solar Cell Production Process Presented

92MI0303A Bonn *TECHNOLOGIE-NACHRICHTEN*
MANAGEMENT-INFORMATIONEN in German
29 Jan 92 pp 10-11

[Text] Work on developing a technical precipitation process for cadmium telluride (CdTe) films at Battelle has led to a process for producing thin-film solar cells that makes for surprising material and time savings and is therefore also economical. The first test cells achieved 11 percent efficiency, thus also demonstrating a potential for significantly higher values. The next step is to achieve a rapid commercial application within a targeted development program, with industry playing a substantial role.

Thin-film solar cells hold out the best prospects for exploiting solar energy, as they convert sunlight directly into high-grade electric power and can be produced economically.

Only a very few known semiconductors are suitable for thin-film solar cells. Only four semiconductors have so far given promising results, i.e., efficiency of over 10 percent: amorphous and crystalline silicon, copper indium diselenide, and cadmium telluride.

As in the case of photographic film, the production process used decisively affects the cost of solar cells, as does their capacity (in this case, their degree of efficiency). The process must use as little material as possible and be fast, so that the high investment costs for equipment for producing high-quality semiconductor films can be justified by high productivity.

Although the known silicon solar cell, currently used in the federal government's "1,000 roofs" program, is a technically mature system, it is still too expensive, both for the present and for the near future, to compete with conventional energy sources. Only thin-film solar cells will be able to.

In the meantime, university and research institute work all over the world has provided a better understanding of the basic processes and material parameters, which is

why a resumption of this work at Battelle in 1990 seemed justified. This has now resulted in a surprising success: a particularly cost-effective precipitation process called close-spaced sublimation. This process can be used to deposit particularly high-quality CdTe layers at very high speed. It consists in transsublimating the CdTe material at a temperature of 600 to 700°C from a plate-shaped blank to the slightly cooler (about 500°C) substrate placed close to it, on which good polycrystalline CdTe films grow. The precipitation process takes place in a moderate vacuum in a protective atmosphere, which makes for particularly cost-effective production. Cheap window glass is used as the substrate. Battelle in Frankfurt used films that can be precipitated in one or two minutes by this method to produce initial solar cells with 11 percent efficiency.

Initial estimates point to production costs significantly lower than 200 to 300 German marks [DM] per square meter for finished modules at an output of 10,000 square meters per year. This means specific production costs of DM2,000 to DM3,000 for a one-KW yield, a performance feasible with direct sunlight.

This price could even mean that this method of electricity generation could compete with conventional power stations. Battelle's cost estimates are about 80 percent lower than current prices for silicon cells. This will open up a considerable market for CdTe thin-film solar cells, what will make industrial investment worthwhile.

Recyclable Plastic for Auto Radiator Grilles Tested

92MI0307A Wuerzburg UMWELTMAGAZIN
in German No 1-2 Feb 92 p 20

[Text] As part of a joint development project, Bayer AG and Volkswagen AG have carried out strict tests on the recyclability of Novodur, a technical thermoplastic by Bayer based on ABS [acrylonitrile-butadiene-styrene] resin.

Volkswagen AG's pilot automobile processing plant in Leer, East Frisia, already dismantles large numbers of scrapped Volkswagen and Audi cars for research purposes in preparation for future auto recycling. Large quantities of radiator grilles made in Novodur thermoplastic accumulate when five- to 10-year-old cars are dismantled. These old components are cut up, cleaned, and reprocessed to make new radiator grilles.

The surface quality of these new radiator grilles made with recycled Novodur is surprisingly good. To the naked eye, they are indistinguishable from radiator grilles made with new material. As the paintability of Novodur is not affected by recycling, Volkswagen can paint the recycled material the same color as the new car.

Extensive trials with Novodur scrap have also demonstrated that many years' outdoor use in the harshest of atmospheric conditions hardly damages the material at

all. The mechanical properties of the recycled material come very close to the high level of Novodur. If new material is added, the resulting quality also satisfies the current requirements set for automobile construction materials.

The results achieved so far in the project make it clear that reprocessed plastics do not necessarily have to be channeled into down-market uses. If they are collected by type and properly reprocessed, old components can also yield high-quality materials for long-term high-performance applications.

The results achieved encourage both firms to work closely together on further joint projects on recycling plastics from automobile scrap.

Survey Assesses Solar Power Station Potential

92MI0304A Bonn WISSENSCHAFT WIRTSCHAFT
POLITIK in German 12 Feb 92 p 5

[Text] Solar power stations could make an immediate contribution to environment and climate protection. This is the main finding of a study of the potential for solar heat power stations in the Mediterranean area commissioned by the BMFT [Federal Ministry of Research and Technology] from the German Aerospace Research Institute (DLR) and the Solar Energy and Hydrogen Research Center (ZSW), both in Stuttgart, Interatom (now Siemens) in Bergisch Gladbach, and Schlaich, Bergermann & Partners (SBP), also in Stuttgart, and presented this week in Bonn.

According to the energy policy framework adopted, from 3,500 to 13,500 megawatts of solar energy could be produced cost-effectively by power stations in 16 Mediterranean basin countries by the year 2005. This would replace from 4 to 15 percent of the increase in oil and gas that the area would otherwise require. In the longer term (say by 2025), solar power stations could bring about a significant reduction in CO₂ emissions in this growing economic area. Each megawatt of solar energy replaces 2,000 tonnes of CO₂ emissions per year. A combination of more efficient fossil-fuel power stations and an additional expansion of solar power stations for a total of 23,000 megawatts by 2025 would at least make it possible to stabilize CO₂ emissions at current levels. A rapid build-up of solar power stations after the turn of the century to 33 percent (about 63,000 MW) of the expected 190,000-MW market potential for new power stations up to the year 2025 would make it possible to cut current CO₂ emissions of about 380 million tonnes a year by up to 35 percent.

The expansion of solar power stations involves a market worth 15 to 60 billion German marks [DM] by the year 2005 and DM90 billion to DM220 billion over the period from 2005 to 2025.

The conclusion to be drawn is that work should start straight away if the contribution that solar power stations can make to energy supplies and environment

protection in the Mediterranean basin is to be achieved by the year 2025, said the scientists presenting the study. Favorable framework conditions will have to be established at the political, i.e., government level, as solar heat power stations would not represent a viable alternative in terms of energy policy as long as the oil price structure does not have to take account of the cost of environmental impact.

The immediate start required could make use of the farm power stations (over 300 MW) with parabolic trough concentrators in combination with oil or gas firing, as tested in California. In addition, all the systems studied show considerable scope for development, including solar towers with central radiation receivers and parabolic concentrators with Stirling motors.

Solar heat power stations ranging from 50 kW to 100 MW could be ready for commercial use within 10 years. However, the creation of the requisite industrial production facilities can only be justified in economic terms if projects are first carried out, and that also means financed, immediately in the Mediterranean basin.

Environmental Biotechnology Program Launched

92MI0329A Bonn *TECHNOLOGIE-NACHRICHTEN*
MANAGEMENT-INFORMATIONEN in German
18 Feb 92 pp 2-4

[Text] Microorganisms make it possible to develop new, environment-friendly materials, destroy ecologically harmful substances, and detect ecological damage. Environmental biotechnology has nowhere near reached its full development capacity. Following intensive consultations with experts from science and industry, therefore, the Federal Minister of Research and Technology (BMFT) has decided to allocate 50 million German marks [DM] over the next five years for environmental biotechnology research and development projects under the "Biotechnology 2000" program.

It is intended to allocate the funding through two invitations to bid. Project outlines and applications may be submitted immediately. The projects eligible for funding will have the following objectives:

- developing new biologically degradable materials, so as to prevent waste from even occurring;
- improving control over the composting of organic substances so that refuse compost can be extensively recycled and new microbial processes for soil and waste water purification can be developed;
- improving microbiological test methods.

In line with these objectives, the capacity for microbial decontamination and reclamation of the environment must be enhanced in three specific areas:

1. Development of Environment-Friendly Materials

Biology can help to create environment-friendly substances such as biologically degradable materials. New products of bacterial metabolism with properties similar

to those of plastics are being sought, i.e., biopolymers (such as new polyhydroxybutyric acids), which help prevent dumps from building up. The main objective as far as refuse composting is concerned is to improve process control so as to restore organic substances and macro- and micronutrients to the natural ecocycle, for instance as soil conditioners.

Biopolymers are thermoplastically moldable substances created by bacteria, which are comparable with synthetic plastics but have the advantage of being biologically degradable. These substances have a wide range of potential applications, including packaging materials, such as cosmetic bottles, shoppers, disposable goods (e.g. party cutlery), and office materials (e.g. sheeting). Biopolymers could be used in medicine for developing implants (for stabilizing bone fractures, for example) that would dissolve in the body without side-effects once they have served their purpose, thus obviating the need for a further operation. Though production costs for such biopolymers are currently still too high, their prospects will increase as new microorganisms are developed or existing ones are improved, and as disposal costs for conventional packaging materials continue to rise.

2. Degradation of Waste Substances

Biology can also assist in the destruction of pollutants. Biological degrading processes exploit the metabolic properties and capacities of specialized microorganisms such as bacteria and fungi to achieve extensive degradation of pollutants without their polluting the environment in a different form, for example as exhaust gases (in the case of thermal processes). A positive ecobalance can be established in this way. Microorganisms may also make it possible to "crack open" the chlorinated aromatics found in waste water from paint shops and printing works.

There has been little research to date into the potential of suitable microorganisms. In many cases they still degrade too slowly: With biological soil decontamination, such as oil or dioxin degradation, it can take up to two years to degrade all pollutants. As it takes too long to bring concentrations down to below the official limits, the cost benefits over other, nonbiological, purification and reclamation processes and waste dumping cannot actually be achieved. The new environmental biotechnology projects in this area will thus address the following: As regards effluent, soil, and exhaust air purification and the reclamation of derelict sites, the attempt will be made to extend the potential of microbes by discovering new microorganisms or mixed cultures, and understanding and enhancing their capacities. The prime objective is to use biotechnology to develop representative technical solutions for the degradation of highly toxic and hazardous substances (such as chlorofluorocarbons and dioxins) and heavy metals (such as cadmium and lead) for use as models. Research is also required into the removal of particularly malodorous substances from exhaust air.

3. Biological Testing Methods

Biology also assists in identifying environmental pollution. However, there is still a lack of microbiological test methods that provide information on, for example, whether viable microorganisms are present in contaminated soil, what degrading potential they have, and what marginal conditions have to be met for optimum pollutant degradation, e.g., addition of oxygen or nutrients. New test methods may be based on genetic probes, which provide information on the kinds of microorganisms present. The development of biosensors, which identify biochemical oxygen requirements or specific pollutants for water quality assessments, for instance, also holds out excellent prospects. The advantage of these biosensors is that they provide very rapid information on effluent quality, without the need for detailed laboratory analysis or tests on fish, so that the appropriate decisions can be taken.

Research projects on developing and standardizing new microbiological test methods will therefore also be funded, so as to promote the monitoring and assessment of the damage caused by pollutants, their degradation, and the efficacy of biological processes.

Information and Consultancy

In view of the large number of small and medium-sized enterprises working on biological purification and reclamation processes, a pilot scheme will be launched under which temporary technology transfer centers for biological processes remedying environmental damage will be installed at research institutes. The purpose is both to encourage the introduction and dissemination of known environment-oriented biotechnological methods and to provide impartial advice, information, and training with a view to overcoming uncertainty on the part of local authorities and enterprises, which, when faced with cases of pollution, often have to decide whether to use biological degrading processes.

Joint projects, in which enterprises work together with research facilities, have the advantage of pooling scarce resources, achieving technology transfer and synergy at an early stage, and having little influence on the competitive situation. They therefore have the highest funding priority; preference is also given to R&D projects or proposals for technology transfer centers involving institutes in the new laender and in eastern Berlin.

The BMFT intends to collaborate closely in environmental biotechnology with American institutes and organizations, such as the environment protection agency. It is planned to coordinate research and development activities, so as to pool knowledge and to acquire complementary experience. Proposals for projects involving collaboration with American agencies will therefore receive preferential funding.

The rate of funding complies with the EC's guidelines for state subsidies and differs according to the level of

research: Industrial basic research projects will be eligible for a maximum of 50 percent, and applied research projects for a maximum of 25 percent. A 10 percent bonus is granted to small and medium-sized enterprises (defined by the EC as enterprises with fewer than 250 employees and revenue below ECU20 million), and to applicants from the new laender. The funds will be allocated through two invitations to bid. The deadline for the receipt of draft projects for the first round is 30 April 1992, and for the second round 30 April 1993.

Further information is available from the project manager: the Biology, Energy, and Ecology [BEO] Division at the Juelich KFA, P.O. Box 19 13, 5170 Juelich.

Latest European Ozone Research Results Show Negative Trend

92MI0334A Bonn *TECHNOLOGIE-NACHRICHTEN*
MANAGEMENT INFORMATIONEN in German
18 Feb 92 pp 14-15

[Text] The latest results of the European EASOE [European Arctic Stratospheric Ozone Experiment] 91/92 ozone research campaign suggest that the ozone layer over Central and Northern Europe is unusually thin this winter and that the severe chemical disturbances in the atmosphere may cause ozone depletion during the coming weeks. Satellite measurements by American scientists have since confirmed this diagnosis.

Stratospheric ozone is being destroyed more rapidly than has previously been assumed. The latest analysis of ozone observations over several years show that the downward trend has virtually doubled within the last 10 years and that over this period up to 8 percent of the ozone was lost in the spring months in the northern hemisphere. It is particularly alarming to note that the intermediate latitudes, including the Federal Republic of Germany, are also being affected by these losses. It has been established that anthropogenic trace gases such as chlorofluorocarbons (CFCs) and halogens are causing this ozone depletion. The following detailed interim results of the EASOE campaign are now available:

- The ozone content of the stratosphere over the Arctic Circle and in the intermediate latitudes of Europe is unusually low this winter;
- The eruption of Mount Pinatubo in June 1991 has increased the stratospheric aerosol content virtually tenfold over previous years;
- The nitrogen dioxide (NO₂) concentration is very low. In the volcano aerosol region nitrogen oxide (NO) and NO₂, which normally limit the ozone-destroying effect of chlorine, have in fact been drastically reduced;
- Measurements of the chlorine compounds in the lower stratosphere above the Arctic Circle suggest that a large proportion of the chlorine originating from CFCs is present in a form that can destroy ozone directly;
- Calculations performed on models based on the chemical changes observed indicate that further ozone depletion can be expected;

- The eruption of Mount Pinatubo has severely disturbed the atmosphere of the northern hemisphere this winter.

Transport processes need to be taken into account as well as the chemical changes to explain the unusually low ozone concentrations. The respective contributions made by these two factors cannot, however, be assessed until the results available so far have been analyzed in detail.

The intention behind the EASOE campaign is to document more fully than ever before how the dynamic processes and the chemical composition of the arctic polar vortex have developed over time. The polar vortex is a meteorological phenomenon that occurs over the poles in winter, gives rise to very low temperatures (below -80°C), and contributes directly to the formation of the ozone hole over the South Pole. Although there is no ozone hole in the northern hemisphere (as yet), it is assumed that the observed ozone depletion is a direct consequence of the processes making up the arctic polar vortex. As far as we know at present, the key to understanding global ozone depletion lies not only in knowing precisely how ozone-damaging trace substances build up in the stratosphere, but also to a large extent in understanding the polar vortices.

The arctic polar vortex is a particularly complex meteorological phenomenon. Its circulation can be quite different from one winter to another, its center can occur at different locations, and rapid warming can also cause it to break up suddenly. For a campaign these are imperious that, by their very nature, cannot be planned.

The current winter, however, seems to be fulfilling the "hopes" placed in it: An unusually strong vortex had already formed before the end of 1991. Its air masses lay over the European arctic region for most of the time, sometimes extending as far as Central Europe. For several weeks, Kiruna was at the center of the vortex and thus proved the most convenient place at that time for carrying out the balloon and airborne measurement programme in particular.

Until the middle of March 1992, more than 200 scientists from 16 countries will be in Northern Europe studying the chemistry of the stratospheric ozone layer over Antarctica [as published].

Project Develops Promising Diesel Fuel From Rape Oil

92MI0333A Bonn *TECHNOLOGIE-NACHRICHTEN*
MANAGEMENT INFORMATIONEN in German
18 Feb 92 pp 13-14

[Text] As part of the joint project on "fuel from rape," VEBA [United Electricity and Mining Corporation] Oil AG in Gelsenkirchen is developing a process whereby refined rape oil mixed with mineral oil components is processed in conventional "hydrotreaters" to obtain specification-standard diesel oil. The main part of the

hydrocracking process consists in treating rape oil with hydrogen in a pressure vessel with the addition of a special catalyst. The fuel components thereby produced are paraffin and propane in liquid gas form. Both products can be used as a source of energy and no marketing problems are expected, even in the future. The carbon component of these products is derived wholly from the renewable raw material rape.

The basic knowledge available on this process suggests that it will be possible to use rape oil in existing oil processing plants without any further major modifications to the machinery. The products can be sold without restriction under the existing fuel distribution system.

Using a proportion of rape oil in existing plants will, in principle, make it possible to process it on an industrial scale without any extra investment. As a change in the proportion of rape oil used is not expected to cause technical production problems, plant operation will not be dependent on variations in the availability of rape oil on the market. The studies carried out under the joint project will verify these expectations and ascertain the optimum production conditions.

Although the Federal Minister of Research and Technology is optimistic about the technical prospects, the results of the tests are not yet available. Partial results from the technical tests in progress are expected during the second half of 1992 at the earliest. The overall aim of the joint project is to examine and assess the prospects for using rape oil as a raw material for the production of fuels.

The Federal Ministry of Research and Technology is providing about 2.6 million German marks for this joint project over the period from 1 July 1991 to 31 December 1993.

Trials Confirm Incineration Destroys CFCs

92MI0330A Bonn *TECHNOLOGIE-NACHRICHTEN*
MANAGEMENT INFORMATIONEN in German
18 Feb 92 pp 6-7

[Text] Large-scale trials carried out at a German refuse-fired heating and power station have just confirmed the results obtained at the Tamara pilot waste incineration plant belonging to the Karlsruhe Nuclear Research Center [KfK] Isotope Laboratory. The chlorofluorocarbons (CFCs), known as "ozone killers," used for producing polyurethane foam were completely destroyed in normal industrial-scale waste incineration operating conditions as well. This means that the polyurethane foam with a high CFC content, large quantities of which are encountered in refrigerator disposal, can be destroyed in an environment-friendly manner in waste combustion plants. The trials also showed that, with conventional modern exhaust gas purification systems, the current legal limits on hydrogen fluoride emissions, which occur as by-products, can easily be complied with.

The large number of obsolete refrigerators poses a potential ecological problem owing to the CFCs contained in the refrigerating circuits and present as foaming agents in the polyurethane foams used for thermal insulation. The older type of refrigerator contains around 150 grams of CFC in the refrigerating circuit and around 500 grams in the insulating foam. Although it is possible to remove and store the CFCs contained in the circuits, there is over three times as much in the insulation material, and, when dumped, the gas can be exhaled, thus making a substantial contribution to the depletion of the ozone layer.

Initial trials at the KfK's Tamara pilot waste incineration plant, conducted under strictly controlled conditions, demonstrated that the CFCs were completely degraded without emission of any further harmful by-products. Trials were conducted on the incineration of polyurethane foam containing the most frequently-used CFC, the trichlorofluoromethane known as R11. It has now also been shown that these results can be reproduced in the real conditions of a large-scale commercial refuse-fired heating and power station. One stage of these trials involved the incineration of an additional 120 kg polyurethane from scrapped refrigerators in one of the two firing plants, which work in parallel, each with a throughput of 9 tonnes of refuse per hour. The exhaust gas from the plant was analyzed for CFC content, and particularly for possible reaction products such as hydrogen fluoride, dioxins, and short-chain hydrocarbons. The following concentrations were measured in the plant's exhaust gas:

- The CFC concentration was around 20 micrograms/m³ i.e., the CFCs present in the polyurethane foam were more than 99.998-percent destroyed;
- The highest hydrogen fluoride concentration measured was around 0.1 milligrams/m³ i.e., a factor of 10 below the emission limits of 1 milligram/m³ currently in force for waste incineration plants;
- No other R11 decomposition products were detected.

The results obtained with Tamara were thus confirmed on a large-scale commercial basis, and a low-pollution disposal method for the insulating material from scrapped refrigerators was demonstrated. As was already the case with the destruction of dioxins and the recycling or immobilization of heavy metals in the flue-dust of waste incineration plants using the Karlsruhe 3-R process, these trials have again confirmed that waste incineration is a viable means of destroying pollutants if the appropriate techniques are used.

University Develops Fluidized Bed Electrolysis of Chlorinated Hydrocarbons

92WS0414A Duesseldorf VDI NACHRICHTEN
in German 21 Feb 92 p 33

[Article: "By-Product of Garbage Incineration To Be Utilized; Acid Under Current: Chlorine and Hydrogen Produced From Hydrochloric Acid by Means of Electrolysis"]

[Text] VDI-N, Duesseldorf, 21 Feb 92—Mostly heavily contaminated hydrochloric acid is produced as a by-product of the treatment of flue gases after the incineration of garbage or hazardous waste. Fluidized bed electrolysis can be used to economically exploit waste hydrochloric acid.

During the incineration of waste materials containing chlorine—PVC, for example, or chlorinated hydrocarbons—exhaust gases are produced that also contain hydrogen chloride (HCl, hydrochloric acid), among other materials. Progressive plans for the wet treatment of flue gases provide for an acid-operated washing method to separate the hydrogen chloride. Since by this method other materials are also washed out, the resulting hydrochloric acid with solid materials, heavy metals, organic substances, mineral acids, and salts is contaminated.

Methods that decontaminate and concentrate the hydrogen chloride through distillation and which afterward may break it down into its components, hydrogen and chlorine, are costly in terms of both process engineering and energy consumption. The University of Erlangen-Nuremberg has now developed a method of processing waste hydrochloric acid by electrolysis as an alternative. By means of this the acid is separated into its chemical elements, chlorine and hydrogen, with the aid of electric current.

The design for this: a fluidized bed instead of electrodes. Since conventional HCl electrolysis requires more concentrated and uncontaminated acid. If, however, plate electrodes are replaced with a fluidized bed composed of particles that conduct electricity (graphite particles, for example) and which are charged by means of supply electrodes, according to a report from the university, the principle of electrolysis can also be applied to waste hydrochloric acid. Since a "three-dimensional electrode" like this permits them to obtain acceptable results with small concentrations of acid as well on the basis of the greatly enlarged surface. Since the movement of the particles in addition results in a cleansing of the supply electrodes and the membrane, contaminated initial products can also be used.

The electrolytic cell built for the chair for chemical engineering consists of a hydrodynamically well-shaped framework that contains the particle electrodes between two parallel graphite plates. The waste hydrochloric acid flows upward through the cell so that the particle electrodes are fluidized.

First, the cell was operated discontinuously so that the acid was circulated until the desired reduction in concentration was obtained. The rate of conversion of the waste hydrochloric acid was high. Sharp reductions in heavy metal concentrations could also be observed during the tests. The final concentrations of mercury, cadmium, or copper were under the legally established threshold values for discharges into waterways requiring official authorization.

On the basis of the promising results that were obtained on the laboratory scale, they plan to apply them on a semi-industrial scale. To accomplish this, a pilot plant is supposed to be erected, in collaboration with the Sigr Company of Mietingen, which will take on the production of the electrolysis cells, on the grounds of the Company for the Disposal of Hazardous Waste (GSB) in Ebenhausen. First of all, a partial current of the waste hydrochloric acid that accumulates there will be decontaminated to test the suitability of the application of the idea in continuous operation.

Germany's Position, Prospects in Photovoltaics Assessed

92WS0402D Duesseldorf HANDELSBLATT in German
5 Mar 92 p 28

[Dipl.-Ing. Reinhold Wurster, Ludwig-Boelkow-Systemtechnik GmbH, Ottobrunn]

[Text]

Photovoltaics: Germany Gambles Away Chances: Implementation of Technologies for Electricity Production Necessary

The Market Penalizes Those Who Come Too Late

The longer the construction of large production plants for photovoltaics is delayed, the greater the danger that Japanese manufacturers, already leading in technology and pricing, will once again get the business. Germany, despite its very good technological position, will abandon or else not even enter another future market.

The most elegant method for converting inexhaustible renewable energy into electricity is photovoltaics (PV). For a quarter century, it has found commercial use in special applications like space flight. Although the market for photovoltaics has expanded in the last decade by over 20 percent per year on average and thus is one of the largest growth markets of all module technologies (mono-crystalline, polycrystalline and thin-layer), no more than about 60 MW of PV module output are being sold annually world-wide. It is made in production facilities with different degrees of automation at greatly variable production costs.

As early as 1988, a Ludwig-Boelkow-Systemtechnik GmbH study commissioned by the BMFT [Bundesministerium fuer Forschung und Technologie, Federal Ministry for Research and Technology] showed how conventional PV technology, for example polycrystalline, can be made with optimized production designs at substantially reduced manufacturing costs, arriving at costs of about 7 German marks [DM] per Wp (Wp equals Watt peak, possible maximum output) for fully wired, grid-connected PV facilities under certain initial conditions. In Germany today, with the BMFT's 1000-roof program, these costs are about DM22 to 27/Wp. In Switzerland, however, grid-connected facilities are already being set up for DM16/Wp. This also explains why in contrast to

Germany, where power supply companies always refer to PV electricity generation costs of DM2/kWh and higher, production costs of 1.30 to 1.40 Swiss francs/kWh are achieved in Switzerland, and in fact almost always with PV modules imported from Japan or the U.S., since Switzerland does not have its own PV manufacturing plants.

In Japan, the production costs for polycrystalline PV cells were about 500 yen/Wp (about DM4/Wp) in 1990 and thus less than half as high as in Germany. By the year 2000, they should even drop to about 100 to 200 yen/Wp. System costs without PV modules should then be about 160 yen/Wp for roof-integrated systems. With mass production, the turnkey roof-integrated PV system would then cost about 300 to 400 yen/Wp, or about DM3.50/Wp, which for central European insolation conditions leads to electricity production costs of about DM0.35/kWh.

Those Who Want To Export Heavily Must Put Forth More Effort

A further difference between Germany and Japan and Switzerland is that Germany does not have a concrete objective with a target date for the use of PV for electricity production. The Japanese power supply companies have agreed to put at least 50 MW PV-output on line by the year 2000. About 200 MW from domestic producers are to be put on line by the year 2000, and about 4,500 MW may even be on line by 2010. The Sanyo company is assuming a PV world market of 10,000 MW for the year 2010 and can envision a world-wide share of 50 percent for PV electricity by the year 2030.

Based on these objectives, a successive expansion of the production capacities has already begun in Japan. Kobayashi of the Sunshine Project even talks about production plants with 100 MW annual production capacity for the second half of the 90s.

Germany is certainly among the technological leaders in PV technology and now, through the purchase of Arco-Solar, commands the largest PV producer in the world. No other country supports R&D activities with more federal funding than Germany; at present it is about DM100 million annually.

The frequently heard argument that Germany has the highest federal R&D expenditures for photovoltaics worldwide, both in terms of percentage as well as absolute value, is no justification for the neglect of more lasting support by the nation or industry. For no other industrialized country of Germany's stature exports nearly as much of its gross national product (Germany: over 30 percent; Japan: about 20 percent; U.S.: 7 to 8 percent).

If one relates total R&D expenditures by the German Government and industry to this export production value, then Germany is even behind the U.S. and clearly behind Japan. If the export of high-tech products is

chosen as the basis for comparison (which, in retrospect, may not appear relevant for the current conditions, but may be a more important indicator for the attainment of future markets) then the picture looks even worse than it does in relation to total export performance.

If a target date were set (for example, 15 percent renewable energy in Germany by the year 2010 as a possible preliminary stage in the world-wide crash program for renewable energy called for in the new report of the Club of Rome), then one would not be satisfied with references to the supposedly nonexistent PV market, but rather would try to reach such a goal with the most fully developed technology and optimized mass production possible.

Such a target date and limited action would not block the path to more advanced and mature technologies, as is often erroneously maintained. Japan will not waste time with laments about the unavailable PV market, but, as has often happened before, will create or else develop this market for itself. Europe took the same route with the Airbus.

The longer the construction of large PV production facilities is delayed, the greater the danger that Japanese manufacturers, already leading in technology and pricing, will once again get the business, and Germany will abandon or else not even enter another future market. If this danger is not faced, then by the mid-90's the European producers may no longer be able to penetrate the flooded market (see the auto market in the U.S.) without having to accept ruinous conditions. Those who come too late to the market, even if they command the appropriate technology, no longer earn what they invested in product development and cannot finance the next generation of technology. This principle can be demonstrated most graphically in the area of microelectronics, but is true in principle for every product capable of being mass-produced, and thus ultimately for photovoltaic systems.

Furthermore, in Japan a competitor has emerged which has no fundamental money problems, commands high liquidity, and need not always act in a profit-oriented way. Low or no returns are accepted over longer periods on the development of strategically important products and on the introduction of products to the market (keiretsu concept).

Germany Lacks a Broad Consensus

In addition, Japan now makes the greatest amount of money available for aid to developing nations, in contrast to earlier years, and is thus beginning to control the markets of these countries (for example, southeast Asia) to an increasing degree (and with them, a large part of the regions especially suited for PV power production).

Opportunity in Germany and also within the EC lies in the availability of a highly qualified, innovative and creative work force, in the entrepreneurial drive to open up new areas of business, and in a possible release of

large sums for financing—DM12 billion worth of coal subsidies alone in Germany annually—which could be used for massive programs introducing regenerative/environmentally sound energy production technologies to the market.

Germany appears to be among the leaders in R&D, but as the industrial country with the highest percentage of export dependency, it has not been able to achieve a positive export/import balance for high-tech products. This would mean that, in contrast to its strongest competitors in the area of high technology—Japan and the U.S.—Germany has not been able to convert its high R&D status into marketable products quickly and extensively enough, which will lead to an ever greater dependency on a few suppliers of high technologies.

If German industry wants to assume a leading role in the area of high technology, then an acceptable target with a fixed deadline developed jointly by the state, industry, and employee representatives and with which industry as well as the population as a whole identify is helpful or urgently needed. Such a process is the real strength and danger of our Asian competitors.

Japan is systematically developing away from thinking in terms of specialized individual systems (product) to thinking in terms of complex systems (functional thinking). Thus it sees the path to the "information society" largely prepared and is beginning to devote itself increasingly to social issues such as the environment, raw materials and recycling, energy, dissatisfaction and uncertainty, intellectual resources, creation of markets, and improving the quality of life. This should succeed through the combination and integration of new technologies—and photovoltaics belongs to these strategic new technologies.

Crops Proposed for Fuel, Chemical Raw Materials

92WS0419A Duesseldorf *HANDELSBLATT* in German
19 Mar 92 p 26

[Article by Lutz-Guenther Fleischer: "The Search for Economically and Ecologically Acceptable Technologies"]

[Text] In a joint project supported by the Federal Ministry of Research, the four chemical firms of Chemie AG Bitterfeld-Wolfen, Leuna Werke AG, Buna AG, and Filmfabrik Wolfen, as well as Ingenieurgesellschaft fuer Umwelttechnologie [Engineering Society for Environmental Technology] mbH, Aachen, and a group of scientists from the faculty for food technology at The Humboldt University in Berlin investigated the utilization of renewable raw materials in the future technologies of central German chemical firms and the requisite research projects by a study of the technological consequences.

The study starts with the assumption that new and better products, more economically efficient processes and

ecologically acceptable technologies are important prerequisites for a change in economic structure in the chemical triangle of Halle/Leipzig/Bitterfeld.

Because of their interconnections and key functions, the existence and development of the chemical industry in central Germany is a matter of fundamental importance for the eastern German economic area not only in terms of a single economy but also in macroeconomic terms. How problem-ridden the restructuring and reorganization of this area and the search for strategies accepted by the majority and how socially workable solutions are, can be made clear by three statements.

While in 1991 sales for the West German chemical industries with their 600,000 employees amounted to roughly DM170 billion, the chemical firms in the new Federal Laender took in about one-twentieth of that. Of the 330,000 jobs in the chemical industry in the former GDR, fewer than 100,000 will remain in the long term.

The closing report of the trust institution about the management concepts for Bitterfeld, Leuna, Buna and Wolfen of 4 July 1991 states: "Based on the current situation, from the point of view of pure business economics competitiveness for large-scale chemical enterprises can hardly be achieved in any area." But an industrially impoverished zone with broad areas which have been turned into wasteland or steppes, and the social consequences, are not beneficial to anyone.

So it is necessary to find and to put into practice promising and socially workable innovations, while eliminating outmoded technologies, consistently excluding old-fashioned technology, and introducing modern technologies with significantly greater efficiency and demonstrable ecological advantages. The product lines and end products mentioned in the study show that a qualitatively and quantitatively expanded utilization of renewable raw materials can be one way—though certainly not the high-profile way or the one promising the biggest profits—to move towards developing a "gentle chemistry" for the fuel-converting industries of Saxony-Anhalt.

The case for the use of such agrarian raw materials as starch, sugar, plant fibers, wood, vegetable oils and fats for the production of drugs, natural plant protection and growth regulators, and also the utilization of certain cultivated plants to treat polluted soils, is based particularly on the following considerations:

- The need to find more ecologically favorable technologies for fuel conversion, product recycling, utilization of waste and excess products of the land, forest and foodstuffs economies;
- and in future—the need to be able to fall back on renewable resources to a greater degree;
- the need to increase safety in provision of fuel and energy;
- the need to be able to contribute to a reduction in the problem of agricultural overproduction.

Experts estimate that within ten years approximately 4 million hectares of land in agricultural use will have to be converted. It makes sense that the loss of acreage for food production primarily affects lower-quality soils. The soil resources of the new Federal Laender will be particularly threatened, since they include, besides 30 percent productive, easily workable soil and 17 percent soil with adequate groundwater, 7 percent soil which is hard to work, 12 percent soil seriously endangered by standing water and 27 percent sandy soils or soils far from groundwater.

By itself the last group, which is best suited for elimination, makes up approximately 1.69 million hectares of the useable agricultural acreage of the new Federal Laender. Roughly 600,000 hectares of acreage (about 9.7 percent of the total area) have already been put out of production since 1990. Further agricultural utilization of soils of lower quality to produce "renewable raw materials" is, particularly in Brandenburg, Mecklenburg-Western Pomerania, and parts of Saxony-Anhalt, one of the requirements for economic consolidation which should be under political protection because they are essential.

The idea of using renewable raw materials in the energy economy—even more in the fuel economy—is not new. Germany's chemical industry alone already draws about 1.9 million tons (10 percent of their raw material requirements) from these "natural sources" and thus is more intimately linked with natural cycles.

The Federation, the Laender, the association of the chemical industry, the umbrella organization for agrarian research, among others, have been supporting a great number and variety of projects for years with sums amounting to millions. It is true to say that the future of "renewable raw materials" has already begun.

Results of Environment Minister's Talks With China Assessed

LD1404090992 Hamburg DPA in German 1206 GMT
13 Apr 92

[Text] Bonn/Beijing (DPA)—The Chinese Government is prepared in principle to cooperate in the international protection of the environment and the atmosphere, but without committing itself to a fixed rate of reducing carbon dioxide emissions, which Germany considers necessary. This is the result of Environment Minister Klaus Toepfer's talks in Beijing. Today, at the end of his two-day official visit, he met Prime Minister Li Peng.

Toepfer handed him a letter from Federal Chancellor Helmut Kohl asking for support at the forthcoming UN environment conference in Rio de Janeiro. During his visit to Tokyo a few days ago, Toepfer submitted a document making the same request to the Japanese prime minister.

According to his spokeswoman, Toepfer thinks the "key" to China's involvement in effective measures to

protect the atmosphere, which are to be decided upon at the UN environment conference in Rio de Janeiro, lies in Beijing's wish for the industrialized nations to provide financial support to all developing countries to ensure the protection of the environment. For now the Chinese side is concerned with doubling the economic power of the country over the next 10 years—even at the expense of the environment. Against this background, the environment minister said, the leadership in Beijing is currently only prepared to participate, at the Rio conference, in a "general framework convention" for protecting the atmosphere, without fixing concrete carbon dioxide reduction rates. It is reported that Toepfer could see "movement" in his partners' position, but no breakthrough.

From Beijing's point of view, the member states of the Organization for Economic Cooperation and Development (OECD) should make available \$125 billion, instead of \$60 billion, to the developing countries for environmental measures. These funds should be controlled solely by the states of the Third World. Toepfer made it clear that this position is unacceptable to the industrialized nations. Toepfer suggested a compromise regarding the financial side, saying that the developing countries should have a greater share of responsibility for environment funds. This should be an issue at the Rio conference.

In the interest of protecting the environment and the atmosphere, Toepfer called for more efficient use of energy. It is possible, for example, to reduce the billion tonnes of coal currently used in China every year by at least 300 million tonnes. It is planned to hold a specialized conference on this issue, with German participation, in China this autumn. Beijing's energy minister will visit Bonn before the end of this month.

On the subject of increased use of nuclear energy—one nuclear power station has been in operation since December 1991, and a second installation is under construction—the Chinese side made it clear that the high security standards demanded, especially by Germany, cannot be met in their country. On Sunday, the minister and Zong Jian, director of the State Bureau of Nuclear Safety, signed a cooperation agreement in the sphere of reactor safety.

NETHERLANDS

Treasury Minister Calls for More Nuclear Power Plants

LD2404084492 Hilversum Radio Netherlands
in English 1230 GMT 22 Apr 92

[Text] Dutch Treasury Minister Koos Andriessen says more nuclear power plants are going to have to be built to help deal with the greenhouse effect. Speaking in the house journal of the Dutch Trade Union Confederation he claims that the world's long-term energy problem cannot be solved without the use of nuclear power. In the

wake of the Chernobyl disaster, the Dutch government of the time decided no new nuclear generators would be built before 1994. At present over 90 percent of Dutch energy production comes from gas and coal, two percent from oil and seven per cent from nuclear power.

NORWAY

Joint Russian Nuclear Waste Mapping Project Foreseen

92WN0449A Oslo AFTENPOSTEN in Norwegian
7 Apr 92 p 3

[Article by Halvor Tjonn: "Pollution in the North To Be Mapped"]

[Text] The radioactive pollution of the northern areas will finally be mapped. This summer, a Norwegian-Russian research ship will chart pollution sources in the Barents and Kara Seas.

A very satisfied State Secretary Borre Pettersen of the Ministry of Environmental Affairs was able to affirm in Moscow yesterday that Norwegian and Russian authorities are working as teammates.

In a few months, a Russian vessel with experts from the two countries will set out on a voyage to uncover radioactive pollution from areas near Norway in the North.

"This summer's research voyage will help us to get the facts on the table. The case is that, today, we have no idea of the extent of the radioactive pollution in the Barents and Kara Seas. Until we know the facts, we cannot take any action to repair possible damage," says State Secretary Pettersen.

The delegation from the Ministry of Environmental Affairs, with Borre Pettersen at its head, met Monday with its Russian counterparts in Moscow and is expected today to sign a protocol where the future course in the matter will be set down in detail.

There is agreement that the research ship will be Russian, but Norway has expressed its willingness to go far in covering the costs the voyage entails.

"From the Russian side, we have met nothing but an accommodating attitude. So far as we have been able to determine, the Russian side will not place any obstacles in the way of discovering the full extent of the problem of radioactive waste in northern areas," says State Secretary Pettersen, and adds:

"In the beginning of May, a Norwegian-Russian expert group will have a meeting in Oslo. Everything that the Russians have discovered about the problem up until now will be set forth then in a report. There is every reason on the Norwegian side to believe that there really will be forward motion in this matter, which has created

uncertainty and fear on both sides of the Norwegian-Russian border in the North."

Government for Unified Approach to Nuclear Waste

92WN0449B Oslo AFTENPOSTEN in Norwegian
9 Apr 92 p 8

[Article by Bente Egjar Engesland: "Help Against Nuclear Waste"]

[Text] The government is making a massive commitment to the establishment of a Nordic and Western cooperative effort that can halt environmental time bombs from the former Soviet Union. Most acute are efforts to prevent leaks from nuclear waste in the Barents Sea.

Norwegian authorities emphasize that Russia and the other countries in the East are, of course, the ones mainly responsible for neutralizing their own environmental bombs. Together with other Western countries, they are placing considerable pressure on authorities in the East.

"But the government is ready to pay our part of the bill and we stand as an environmental guerilla in international forums," Foreign Ministry State Secretary Jan Egeland tells AFTENPOSTEN.

He recognizes that it is a problem that we are outside the EC, which can be a central actor in cleaning up the ecological slag and waste heaps of the former Soviet Union and East Europe. Investments of billions are required here, of a size that nobody until now has had the ability or the will to acknowledge. Norway hopes that, as time goes by, the European Development Bank [EBRD] can commit itself to environmental investments in the East.

The costs in repairing the Kola power stations alone are at least 3-6 billion kroner. If one were also to repair other power stations, or even close them down, we could be talking about an amount one hundred times as large.

Strategy

The political leadership in the Ministry of Foreign Affairs and the Ministry of Environmental Affairs met yesterday afternoon to work out a concrete strategy with regard to nuclear reactors areas near Norway, nuclear waste dumped in the Barents Sea, nuclear waste storage on land and ships, and the possibility of new test explosions on Novaya Zemlya.

A working group is to be established involving all concerned ministries and official departments in order to map out the environmental threat picture and suggest possible actions, both for Russia to take and the international community. State Secretary Borre Petersen of the Environment Ministry has just been in Moscow on the same errand, and to get an insight into the scope of nuclear waste dumping.

The governments are to clarify how money can be invested in the most profitable way possible. For example, it may be a question of how much can be gained from attempts to economize on energy in the East European countries, which are squandering energy today.

Temporary expedients are also relevant, such as giving specific security training to people who are working at nuclear power plants. Vis-a-vis the CSCE [Conference on Security and Cooperation in Europe], Norway has pushed for better warning agreements in case of accidents or waste.

For a long time after the collapse of the former Soviet Union, environmental work stood at a standstill and Norway lacked a negotiating counterpart in Russia. But, according to Egeland, things are now looking up. Norwegian environmental and foreign affairs authorities are meeting an open and positive attitude.

Knowing well that Norway alone is also completely powerless in the face of the enormous environmental problems in our immediate vicinity, the government is mobilizing what they can in order to achieve constructive cooperation with Sweden and Finland, and in international forums.

The dialogue between Norway, Sweden, and Finland is already under way and, as Egeland says, "we have a common destiny, a common concern, and a common vision." The most important things for Scandinavia to get something done about are the nuclear power plants on Kola, near St. Petersburg, and in the Baltic.

Foreign Minister Thorvald Stoltenberg said in the Storting yesterday that he is concerned about unconfirmed reports that test explosions may be resumed on Novaya Zemlya and, a few days ago, he expressed his anxiety in a letter to Russian Foreign Minister Andrey Kozyrev, urgently asking him that this not happen.

SWEDEN

Eastern Europe, CIS Aid Package Announced

LD2204211792 Stockholm Radio Sweden in English
2100 GMT 21 Apr 92

[Excerpts] Sweden has announced an aid program for Eastern Europe worth hundreds of millions of dollars a year. Fifty million dollars will go in the first year to support currencies the newly independent Baltic States aim to introduce this year. (passage omitted)

The rest of the aid program, totalling 500,000,000 dollars over three years, will go mainly to the Baltic States and to Poland and the St. Petersburg region in Russia. It will include environmental aid, help in setting up democratic institutions and stimulating research, education and private enterprise.

SWITZERLAND

Company Develops Soluble, Recyclable Plastics

92MI0308A Wuerzburg UMWELTMAGAZIN
in German No 1-2, Feb 92

[Text] It has long been well known that recycling's biggest headache is plastics, especially when different types are mixed and they are heavily soiled. A new Swiss firm looks at filling a gap in the market here. Hubertus Bahlsen, who works in development management at Belland AG says: "Because our plastics are designed to be water-soluble, the solution to the packing problem is a solution in the truest sense of the word."

He confidently presents the process, which has taken more than 10 years to develop, as "the only technology currently available anywhere in the world that solves the technical and economic problems of recycling plastic packaging materials from household and trade refuse." No small claim! The core of this innovative technology is the "Belland separator module," which can be integrated into existing recycling plants and replaces time-consuming and costly manual sorting of plastics with a simple automatic filtration process.

In detail, the process works as follows: the Swiss manufacturer's special plastics are not soluble in water, but in water plus alkali they can be broken down into their various polymer chains. But the really special feature is that the liquefied plastic can now be separated from all other plastics and other composites in mixed post-consumer waste by means of conventional filters. Next the plastic is cleaned using expensive but conventional water cleaning processes such as sterilization and fine filtration down to the individual polymer chains.

Roland Belz, Belland AG's founder, promises: "In this way, the clinging residues not normally removed by superficial cleaning and the aromatics and sanitary contaminants that have migrated into the plastic can now be removed to an extent unknown in the past. This means that the plastics processed and then precipitated again in this way do not have the unpleasant smell that is sometimes given off by conventional plastics recycled from mixed household waste." If mixed with appropriate amounts of new material, Belz explains, they can even be used for high-grade applications and particular specifications. Another point in favor of the process is that the process water circulates in a closed cycle throughout the entire dissolving and cleaning procedure. The salts produced during recycling are also reprocessed in a specially designed system and reused.

Large-Scale Industrial Production

So much for the technology, which has already produced satisfactory results in a pilot scheme.

Encouraged by these results, the Solothurn-based company has for the last two years been concentrating its

research and development work on expanding the process for large-scale industrial mass production. Back at the end of last year Roland Betz told a press conference that changing the production process to include the targeted use of mass-produced raw products had raised output capacity from 600-800 to 30,000-40,000 tonnes a year. At the same time, manufacturing costs had been brought down from 17.50-25 German marks [DM] per kg to a competitive selling price of DM5-6/kg. Cooperation with Mannesmann KG and other firms has obviously paid off.

It is therefore hardly surprising that, in this age of packaging regulations and obligations to take used packaging back, Belz sees brilliant market prospects in Europe, the United States, and Japan. Apart from the convincing recycling technology, there is an impressive range of applications for the special plastic, ranging from core solution [Loesekern] technology for injection molding to labeling systems, diapers and sanitary products, adhesives for telephone directories and catalogues, and temporary protective coatings. The innovative Swiss firm works with such international household names as Mitsubishi, Kimberly Clark, ITT-Japan, Nynex-USA, and the German firms Tengelmann and Schoeller and the laminated foil manufacturer Mildenerberger & Willing.

In readiness for the upcoming "major offensive," the company is increasing its capital by 10 million Swiss francs in preparation for setting up a production facility in the new laender. "We are currently negotiating for two alternative sites in Saxony-Anhalt," explains Belland PR spokesman Walter Thielemann. Since nothing had yet been settled at the time of going to press, Thielemann was unwilling to say any more.

There is no doubt, however, that, in addition to pressing ahead with preparations for large-scale industrial production, the Swiss are also seeking to market their know-how. In the future, too, Belland will therefore be offering interested plastics manufacturers all the technology required for production by way of licensing agreements.

UNITED KINGDOM

EC Countries Asked To Limit Toxic Waste Shipments

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[Article by Boris Johnson]

[Text] Britain's countryside must not become the dumping ground for toxic waste from other EC countries, the Government said last night.

Despite Britain's highly developed recycling industry—which imports about 25 percent of its waste from the rest of Europe—the Government joined EC environment

ministers in calling for limits to cross-border shipments of lethal chemicals, even within next year's single European market.

"We don't want Britain to be a magnet for international waste," said one British official.

Another said that ministers had come under strong pressure from environmental groups ever since public alarm was raised by the Karin B episode in 1988 when a ship laden with toxic substances attempted to dock in Britain.

Ministers argued for national self-sufficiency in disposing of toxic waste. It is a striking departure from single market principles, by which the 12 countries are to be treated as one commercial territory from next year.

Rather than free movement of waste, self-sufficiency is to be enshrined in a new regulation.

It means Italy and other countries will have to begin constructing their own disposal facilities.

Cross-border traffic in hazardous waste is to be minimised, but not banned. Small countries, such as Luxembourg or The Netherlands, will be able to make use of big reprocessing plants in Germany.

Rechem, the leading British waste disposal firm, said last night it had no objection to self-sufficiency, even though this could cut its turnover of waste from EC countries, much of it processed in Wales.

A spokesman said Rechem was already engaged in talks with firms from Italy and other EC countries with a view to setting up joint ventures abroad.

The Government argues that a move towards self-sufficiency within the EC will eventually halt shipments of waste to the Third World and eastern Europe.